MAY, 1960

THE AIR LINE PILOT

In This Issue:

Department Of Defense Report On The Role Of MATS In Peace And War

Captain Boone Receives Daedalian Award

Celanese Holders to Vote

NEW YORK—Celanese Corp. of America shareholders will be asked to approve an increase in the number of authorized common shares to 15,000,000 from 10,000,000 at the annual meeting April 13.

"Management has no present negotiations, agreements, understanding or intentions with respect to the issuance of the additional shares of common stock," a proxy statement said. "However, it is felt that sound corporate practice requires that a reasonable number of authorized but unissued shares of common stock be available."

The statement noted that only 213,629 authorized but unissued shares were left after a one-for-four stock distribution last year.

Aberdeen Fund

ABERDEEN FUND reports net assets:

	Mar.31.'60	Mar.31.'59
Net assets per share	$2.06	$2.00
Net assets	15,598,683	13,857,889
Number of shares	7,564,704	6,916,280

American Fletcher National Bank

INDIANAPOLIS, Ind. — American Fletcher National Bank & Trust Co.'s 226,604-share common offering was more than 99% subscribed through the exercise of rights issued to stockholders, it was announced by H. Prentice Browning, president.

The 1,741 shares unsubscribed were purchased by underwriters headed by First Boston Corp.

ILLINOIS MID-CONTINENT LIFE INSURANCE COMPANY

1959 ANNUAL REPORT

COMPARATIVE FINANCIAL STATEMENT
At the Year End Your Company Owned:

	1958	1959
Bonds	$1,632,988.00	$2,901,479.00
Stocks	132,689.74	136,774.96
Mortgage Loans on Real Estate	121,786.53	404,431.47
Cash in Banks	407,196.94	215,886.27
Due from Reinsurance Company	.....	28,035.19
Deferred & Uncollected Premiums	11,763.38	120,203.27
Interest & Dividend Income Due & Accrued	12,233.32	21,675.71
TOTAL	$2,318,657.91	$3,828,485.87
Company Obligations Consisted of:		
Reserves on Policies as Required by Law	$ 43,435.52	$ 563,964.85
Amount held for Dividends & Coupons Left with the Company	.....	65,822.83
Amount Set Aside for Payment of Dividends in 1960	.....	183,571.60
Premiums Paid in Advance	19,140.86	31,224.62
Taxes & Expenses Unpaid	13,620.75	19,331.36
Amounts Held by Company as Agent or Trustee	25,555.46	117,665.02
Mandatory Security Valuation Reserve	6,542.38	22,465.75
TOTAL OBLIGATIONS	$ 108,294.97	$1,004,046.03
Capital and Surplus		
Capital Stock	$ 192,500.00	$ 210,000.00
Unassigned Surplus	2,017,862.94	2,614,439.84
TOTAL CAPITAL & SURPLUS	$2,210,362.94	$2,824,439.84
TOTAL	$2,318,657.91	$3,828,485.87

Assets for each $100 of Liabilities is $381.30 as compared with 5-year average for the 15 largest life companies of $107.75.

ILLINOIS MID-CONTINENT LIFE INSURANCE COMPANY
737 NORTH MICHIGAN AVENUE • CHICAGO 11, ILLINOIS
WHitehall 4-0348

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THE AIR LINE PILOT

MAY, 1960
Vol. 29, No. 5

EDITOR ..... Ed Modes
ASSOCIATE EDITOR ..... J. J. Dragonette
ADVERTISING & CIRCULATION ..... Dolores Swing

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On The Cover

THE pilot shown on the cover receiving the Daedalian award is Capt. Daniel L. Boone (AAL). Boone was awarded the Daedalian Flight Safety Award trophy for his skill in landing his seriously disabled DC-7 on an unlighted emergency field.

The 57 year-old pilot summed up the incident by saying:

"At the time it happened, it was just another emergency landing. It wasn't until we got the airplane on the ground that the crew and I realized what a tight situation we had been in. I would like to pay tribute to my crew who performed perfectly with very little conversation throughout the emergency."

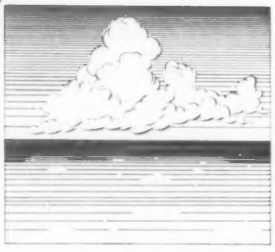
Boone disclaimed any "heroism" on his part, adding, "I was just doing a job that had to be done—the duties all qualified air line pilots must perform in time of emergency. However, it was a serious situation, and I believe that my years of piloting experience were the major factor in turning a potential tragedy into a safe landing.

"I would also like to state that receiving the Daedalian Award was one of the high points of my life—something I'll never quite forget. I was thrilled to meet so many important people at the award presentation ceremonies; and had the singular honor of being the only captain among a host of generals. I would like to thank all those responsible for my nomination and subsequent receipt of the award."

The Louisiana-born pilot has an enviable safety record after 38 years of flying, including over 30 years as an air line pilot, during which time "he never scratched the paint on an airplane".

Boone, an ALPA member since 1931 is presently Vice-Chairman of the Retirement Committee for AAL Council #31, in Los Angeles. He is married and the father of two children.

The complete story of the Presentation is on page 23.



Communications:

Lifeline To Safety

By W. M. Masland (PAA)

IFALPA Aeronautical Communications and Electronic Aids Committee Member
With the Assistance of BERNARD M. BARUCH, JR.
Captain, U.S.N.R.

AT the end of the Second World War, the commandant of the Coast Guard Rescue base at Argentia in Newfoundland was re-assigned. Upon leaving his base he submitted a report of rescue activities during the war years in the North Atlantic. He said that two aircraft had ditched alongside of surface vessels. Most of the ship's complement of these two aircraft had been saved. No other survivors of ditched aircraft had ever been found.

The plans for the survival at sea of persons in aircraft that are forced to ditch follow the plans traditional to survival at sea; take to the boats, abandon ship, call for help, await rescue. In many parts of the world this has been successful. The gear developed shows consistent improvement and remarkable ingenuity. None the less, many problems remain. The launching and inflation of rubber dinghies from a sinking aircraft is neither easy nor sure. Dinghies have been inflated prematurely within the aircraft. They have blown away, or drifted beyond reach of swimmers. They have been torn by jagged metal. Externally stored dinghies have been tried in an effort to solve some of the problems attendant on removing a heavy, bulky package from within a dark cabin. This has not proven too acceptable a solution. There have been premature inflations in the air. One hazard was removed at the cost of an even greater one.

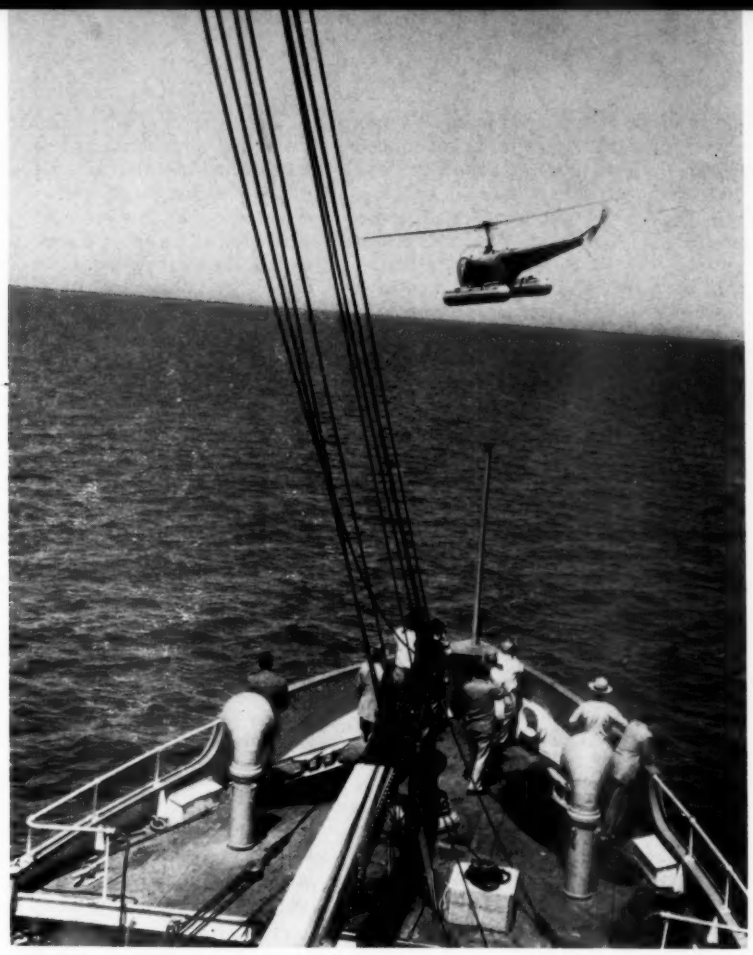
Communications Problems

Assuming that these difficulties have been surmounted, there remains the problem of communications, without which, rescue is unlikely. Mr. J. L. Tillman of United Airlines has said that out of 1,600 ditchings investigated, the Gibson Girl radio had been removed to the rafts in only 12 cases. In only four of these cases had it been made to put out a signal. In another study covering 136 ditchings, the Gibson Girl radio had been put to use just once. As a result of these studies, United had developed a small, self-powered radio operating on VHF and that can be attached to the raft itself. Ranges in the order of 100 miles under service conditions have been obtained.

Such equipment shows much promise and should prove of real value in many parts of the world, especially with a ship's company composed of young, healthy and well-drilled personnel. A ditching with over a hundred passengers at night in waters such as the North Atlantic is another matter all together.

Ideally, an aircraft should never be called upon to ditch. It is possible that we are close to this desideratum and that life rafts, emergency radios and life jackets can be left ashore, with the saving of these storage areas for pay-load usages. It seems unlikely that such a philosophy will be accepted until long after the records have proven that it is valid.

fety At Sea



Floating Aircraft?

The next best solution would be an aircraft which would float. This, has in the, past been possible. Flying boats at times showed an amazing ability to remain afloat under severe conditions. Land planes present another problem. There have, in the past, been efforts to float them. Carrier-based aircraft at one time carried flotation bags strapped to the sides of the fuselage. These were inflated manually upon contact with the water and provided flotation. Like the externally-stored life rafts, these bags present a hazard. They can be, and have been, inflated in flight, to the discomfort of the aircraft. It has been suggested that such bags could be located within the under part of the aircraft, below the passenger deck. Such a location could be ideal, but unfortunately, the bags would not last very long after a ditching due to their exposure to rupture by jagged metal, should they survive the ditching itself. There is also a possibility that in-flight inflation in an overloaded baggage compartment might blow up the aircraft. A more likely scheme for the flotation of a ditched aircraft was suggested several years ago. Foam plastic of a very low density was to be bonded to the inside of the skin of the fuselage. It would take about 2,000 pounds of the material to float a ship of the 707 type. Much, or perhaps all of this weight would be recovered. This kind of plastic is an excellent insulator against temperature, against noise and vibration, and has been used with much success as a stiffener for thin panels. Such a flotation device should not need to be activated either manually or automatically. It would always be in place, ready for use. Even if the ship broke up, as did the Stratocruisers when they ditched, the individual pieces would float. The industry showed no interest in the project, however. This is too bad, because a floating aircraft provided the simplest means of protection against the elements, ready access to radio gear, a sizeable object for location by search parties and other obvious advantages.

If an aircraft will not float, and if in some areas, and for some purposes a dinghy is not a promising piece of equipment, there remains the possibility of ditching alongside of a surface vessel.

Since the war, a DC-4 ditched just west of Ireland. The survivors gravitated to that position by reason of the fishing fleet that frequents those waters. The question remains, "how do you find a surface vessel"?

Finding A Ship

It is quite true that you do not find surface vessels everywhere. It is also true that you do find them almost everywhere. Their greatest densities are, for the most part, beneath the air lanes of greatest density. A major airway where ditching successfully is an unlikely thing is in the North Atlantic. Here the density of surface shipping is heavy. For example, there are daily, from the Port of New York alone, in the order of five ships to and from Northern European ports. Assuming a 17 knot cruising speed as an average, this would

(Editors' Note: The notable interest which Captain Baruch, who assisted in the preparation of this article, has shown towards the air line pilots and their profession has proven to be an invaluable asset to the air line profession. His efforts to secure suitable reserve military status for pilots, and his research into the subject of emergency communications, the subject of this article, are among the many concrete evidences of his interest.)

place the five ships within a 400 mile stretch of track. And this, as mentioned before, is from New York alone. The best study to date of world shipping was made before the war, for presentation at the New York World's Fair. It showed the location of every British ship on a certain day of the preceding November. This fleet represented 25 per cent of the world's total and has since the war, been enlarged above its pre-war size. From the study, one must conclude that on the North Atlantic, it is most unlikely that a high-flying aircraft at any point along the usual track, will be out of gliding distance of a surface vessel. But, how do you find the vessel?

Various methods have been used and suggested. At one time a list of ship positions was issued to departing aircraft.

The list was incomplete, representing but a small fraction of the vessels actually at sea. Also, it was geared to surface needs. Positions were given in terms of noon positions, with course and speed to be applied if one wanted an accurate picture for a given moment. The system presently assumed to be in effect is as follows:

An aircraft in distress transmits a distress message to its guard station. In the case once more of a North Atlantic aircraft, this would be the station either at Gander or Shannon. The station in turn sends a message to the corresponding station in New York. The New York station gets in touch with the plotting center responsible for keeping in touch with surface vessels. They in turn work up the present positions of the ships on which they have information, decide which is the one closest to the distressed aircraft, and send a message to the ship advising it of the plane's distress.

The next stage is somewhat ill-defined. By a reversal of the previously outlined relay, the aircraft is advised of the position of the surface vessel and directed to it. No provision has been made for establishing direct contact between the surface vessel and the aircraft.

It does not take much thought to see that such a system, even if it encompassed all of the vessels available, which it does not, is too cumbersome to be effective in helping high-speed aircraft.

But there is a system which would effectively alert just those surface vessels that would be of greatest assistance to any aircraft in distress. It is simple, direct, effective and inexpensive. It involves the installation of VHF voice equipment on the bridge of every surface vessel. VHF is static-free. It could be monitored by a loud speaker within the bridge itself, where it would cause no strain, because it would be soundless until used. In the case of non-English speaking vessels, Q signals could be used as they are in CW communications, and use made of the international alphabet.

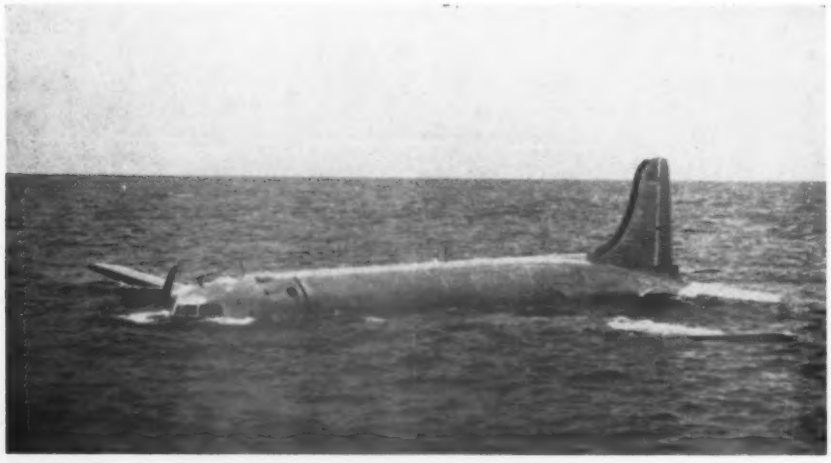
Why VHF?

There are objections and questions that arise. In the first place, why VHF? This is perhaps obvious. A single frequency could be used world wide. The reach is line of sight, so there would be little risk of interference. At the same time, line of sight permits the selection automatically of just the vessels that would be of assistance; e.g. ships within a radius of 150 to 250 miles, depending upon the cruising altitude of the aircraft. Unlike the lower HF frequencies whose operation is irregular and unpredictable, VHF always works and always cuts through static. As mentioned above, it can be monitored by means of a loudspeaker with no strain on the auditor. Also, the equipment is small, light and cheap. It's power requirements are modest. It should cost less than a new whistle, take up less space than an admiral's hat and call for less power than a record player.

The first major hurdle to the implementation of compatible VHF communications between aircraft and ships is the decisions made at the 1947 convention of the International Telegraph Union in Atlantic City. At that convention, surface vessels were assigned VHF frequencies outside of the aircraft band, and assigned frequency modulation as the proper means of emission. Aircraft carry amplitude modulation. The two systems are said to be incompatible. The work of this convention would have to be revised in order to provide at least one or two frequencies which would be common in both users. It is possible that other users of radio would wish to be included in a common VHF distress channel. Forest fire wardens, construction personnel in remote areas, are typical of those who could find use and safety in the availability of a common channel for emergencies.

Ship Owners Object

The major remaining objection seems to come from the ship operators themselves. They say, "Why should we carry equipment for the benefit of our competitors?" There is a growing mass of evidence to show that the carriage of bridge-mounted VHF would be of great benefit to surface vessels. The fact finding board of the Maritime Commission that reviewed the Andrea Doria-Stockholm disaster, strongly recommended bridge radio phone. The experience with this equipment in the Great Lakes, the tests under way in the busy Delaware Bay area, all point to its value. Whistles, horns and flag hoists may have been adequate to an earlier age of lower density in shipping, lower speeds, and a lower standard of safety, but they seem more picturesque than useful today. This is especially true when one considers that the answer is so simple. A set of signal flags and an Aldis blinker light cost more than a VHF set, do not approach it in speed, accuracy or reliability. One need go no further than the shipping pages of the newspaper for verification. Two Philadelphia-bound tankers one rainy night on the Delaware River, blew their whistles at each other, crossed signals and consequently rammed into each other. The attendant fire and explosion made cinders out of seamen and ruined two vessels and their cargoes. Within days of the Andrea Doria disaster, two



freighters collided in the entrance to New York harbor under similar conditions. One sank and the other ran around to avoid sinking. These occurrences are frequent, more so than the newspapers would indicate. One can only assume that the drowning of seamen is not newsworthy, and that most ships are freighters with nothing but seamen on board. In a recent year, 300 of the world's ships sank, 28 without trace. There are a thousand collisions a year between major surface vessels.

Nineteen seaports in six European countries have in use, or are planning on using, the multi-channel philosophy with respect to VHF maritime radiotelephony set forth in the Hague Agreement. In the Great Lakes, there has been considerable development. The plans for the St. Lawrence Seaway call for multi-channel stations at the locks. Experiments are presently being conducted in the Delaware Bay area between the ships of two tanker fleets. Sub-committee 39 of the Radio Technical Commission for Marine Services says:

"If United States vessels are not properly equipped with multi-channel VHF sets, or, as is proposed by some, only with single channel sets, then it can be expected that the movement of these vessels will be handicapped in European port areas and on the Great Lakes." The frequencies to be used are in the 156 mc band with 156.8 as the safety calling frequency.

Agreed then, surface vessels do need VHF voice equipment on the bridge. Why, from their point of view, should this equipment be compatible with aircraft equipment? For every good reason. In November of 1958, the Coast Guard gave a demonstration of rescue by helicopter off the beach in front of the hotel where the meetings of the Flight Safety Foundation were held. While delegates watched from the roof, a helicopter fished a man out of the water, then took the cutter in tow and pulled it clear of the breakers. Captain Burke pointed out that direct voice communication is essential to the successful conclusion of a rescue operation. His point was well illustrated. Captain Burke on the roof, the helicopter and cutter, and even the man in the water were all equipped with small VHF equipment and communicated freely. Rescue assistance provided by aircraft, both fixed wing and rotor, has become a common-place method of cheating Davy Jones Locker of seamen as well as airmen.

Two years ago, two different crews were lifted ashore to safety by helicopters from vessels foundering in the

Mediterranean. The possibilities are limited only by the number of aircraft and by the means to communicate. Last winter, a new Danish motor ship sank with all hands 37 miles off Prince Christian on the southeast tip of Greenland; destroyed by the ice that flanks that rocky coast. A simple call to any aircraft operating in the area would have produced accurate information stating that ice was heavy on the east and southeast coast. Since this tragedy, the operator of the aeronautical radio station at Prince Christian has acquired the habit of asking passing aircraft for reports on the ice, either by visual observation or by radar. But what he can do with the information is in doubt. He could not, last year, communicate with a surface vessel 37 miles away because he had no compatible frequencies. Nor does he now. Ironically, the Danish ship was equipped with every known safety device authorized by law. This included VHF frequencies in the SARAH band. But he had nothing at all with which to talk to aircraft.

In Summary

▶ In many parts of the world the most likely way to save any part of an aircraft's passengers list is to ditch alongside of a surface vessel.

▶ The best way to find the nearest surface vessel is to call him on VHF, ask him to lock his key on some low frequency and home-in with the ADF.

▶ The shipborn VHF should be mounted in the bridge and monitored by loudspeakers. Two frequencies should be available; one for calling and reserved for that purpose only, and the other for traffic.

▶ Bridge mounted VHF equipment is of great value between surface vessels, a fact that is receiving general recognition. Less widely recognized is the indubitable fact that aircraft can be of great assistance to surface vessels.

▶ The ITU, arbitor of the international air waves, does not as yet recognize the need for compatible VHF communications between surface vessels and aircraft. They have allotted 2182 kilocycles for that purpose. As the 6th COM Division of the International Civil Aviation Organization found, this is far from an ideal frequency for this purpose.

It is strongly recommended that IFALPA, as an international body, approach ICAO, the ITU, and the newly created UN, Inter-governmental Maritime Consulative Organization with this story and a strong endorsement of the program for the development of a common international VHF voice frequency, available to all users of the air.

It is further recommended that ALPA, as the civil pilot body of a nation well represented in international waters and airways, should approach the FAA, the Maritime Commission and the Congress with this same program for a VHF distress frequency common to all users.

The New Approach To Noise Abatement

WITH the approach of "open window" weather, the familiar noise problem will rear its head again.

Pilots in New York, Los Angeles and a few other communities are acquainted with this problem by intimate association. But with more and more jet stops being added this year, with still more in the offering in the years to come, a greater number of communities will be added to the list as potential sources of trouble.

In the past, corrective measures were taken, for the main part, after the trouble had arisen and organizations such as the NATCC, in New York, and the Los Angeles Noise Abatement Council were formed. With anticipated expansion of the problem, however, steps were underway which, hopefully, will have some effect in reversing this sequence by preventing the problem from becoming initially critical.

Formation of a new national organization to bring together all interested elements of aviation to work on aircraft noise abatement was announced on April 8.

Birth of NANAC

The new organization, known as the National Aircraft Noise Abatement Council, will be headed by its first president, General Jack Cram, USMC (Ret.). The Council will make its headquarters in Washington, D. C.

In a joint statement, Stuart G. Tipton of the Air Transport Association, General Orval R. Cook of the Aerospace Industries Association, and Clarence N. Sayen of the Air Line Pilots Association — the presidents of the three founding members of the Council — said:

"As individual organizations we each have long been aware of, and have accepted, our responsibility to take every means possible to help alleviate aircraft noise problems.

"The aviation industry has urgently and aggressively pursued research into methods of noise suppression, and we have followed every safe and reasonable operating practice and pilot technique designed to help lessen aircraft noise. We are examining every possible avenue of research to devise new and more effective noise suppression methods.

"Now, with the formation of the National Aircraft Noise Abatement Council, we have joined our efforts to strengthen our attack on the problem, and we need the support and good will of all elements concerned. Invitations are being extended by the Council to other interested groups in the event they wish to participate in and contribute to this effort."

The National Aircraft Noise Abatement Council will have as its principal objectives:

- To encourage the development of new techniques, research, and improvement of methods of aircraft operation affecting aircraft noise abatement.
- To provide industry, management and other interested agencies and groups with information on noise abatement activities.

The Council also will be prepared to assist local noise abatement groups by acting as a central source of information and experience, and by provid

ng liaison between these groups and other interested groups and Government agencies. Upon request, although the Council itself will not be active locally in combatting noise problems, it will assist in the establishment of local noise abatement organizations.

Aircraft noise in our airport communities is a problem that has long been a deep concern of everyone in aviation.

The introduction of each successive generation of larger aircraft and the encroachment of housing into areas formerly far out of the city limits, have aggravated the situation.

Now with the introduction of jets—even though the noise they produce is actually no greater and sometimes even less than the noise produced by some piston engines—the noise problem has become acute in many areas.

The formation of the National Aircraft Noise Abatement Committee is recognition of the industry-wide responsibility and need in this respect.

Noise Abatement Nerve Center

By working with local noise abatement organizations, the Council will, by serving as a central source of experience and information, help to attack the problem on a nationwide basis. By this means, every operational procedure and technique which can help lessen aircraft noise can be put into effect in local communities.

The need for such a national organization to coordinate the attack on the noise problem was pointed out by the FAA Administrator when he said:

"The air carriers, the pilots, the airport operators, and the Government have a clear and direct responsibility to act without delay to take all possible steps to minimize the aircraft noise levels in our airport communities. Noise abatement activities on a national basis with effective standards and procedures must be directed towards the solution of this serious and vexing problem."

The Council is the answer to this requirement.

Noise Reduction Methods

A summary of a few of the facts in the aircraft noise problem are as follows:

The problem of reducing aircraft noise is complicated and complex.

Primarily, there are three basic methods of reducing noise, with each method offering a number of different possibilities.

First, noise can be muffled at the source by a noise suppressing device; second, it can be muffled at the receiv-

(Continued on Page 29, Col. 2)

"Good Sound Abatement Approach"

By Tom Towers

Director, Los Angeles Sound Abatement Coordinating Committee

Pilot cooperation is one of the most essential elements in the success of any Jet Age sound abatement program.

This I have learned conclusively after serving as Director of the Los Angeles Sound Abatement Coordinating Committee since last August 17.

Without pilot cooperation and interest any program designed to reduce the unpleasant sounds made by today's turbine-powered transports to an extent compatible with safe flying practices is quite likely to fail or — at least — be seriously impeded.

The interest and desire of pilots of jet transports to cooperate in the LASACC program at LAX has been one of the most gratifying aspects of my current assignment.

Like any average individual, pilots like to be complimented on a job well done. It is a moral and natural reaction of human nature.

The sincerely spoken "good landing, Captain," has never failed to bring an equally sincere "thank you" in response.

Pilots at all levels of air transportation still take a great deal of understandable pride in executing a "no-bounce" touchdown, even after accumulating 15-20,000 hours in the air.

In the LAX sound abatement program, the corollary of a "good landing" comment is the "good sound abatement approach" or the "good sound abatement departure."

At this point it would be fitting to pose this question:

How can it be determined that a jet transport pilot makes a good sound abatement approach or take-off?

There are several ways that this can be determined.

First, it should be noted that when the LASACC's program was established last year, the men who operate the jets were asked to fly the "high" side of the ILS glide slope under VFR conditions, day and night.

They responded favorably to this request and as they acquired time in the jets, and when VFR conditions existed, they flew "high" on the glide slope on approach. This type of cooperation produced well-received sound abatement results which were — and are — reflected in an appreciable drop in complaint calls.

Although to pilots, it may sometimes seem like it, not all residents under the LAX approach and departure corridors complain constantly about jet transport operations.

Some have been gracious enough to compliment a pilot when he has executed a good sound abatement approach or departure. Such compliments are usually directed to the LASACC office after which the flight is identified by calling the control tower.

When possible, the pilot is asked to call the LASACC office. He is then told of the compliment that has been voiced on his flying technique and in return is asked routine questions as to gross weight, speed, etc.

If it is not possible to contact him by telephone, he usually receives a letter at his home in due course, outlining the nature of the compliment.

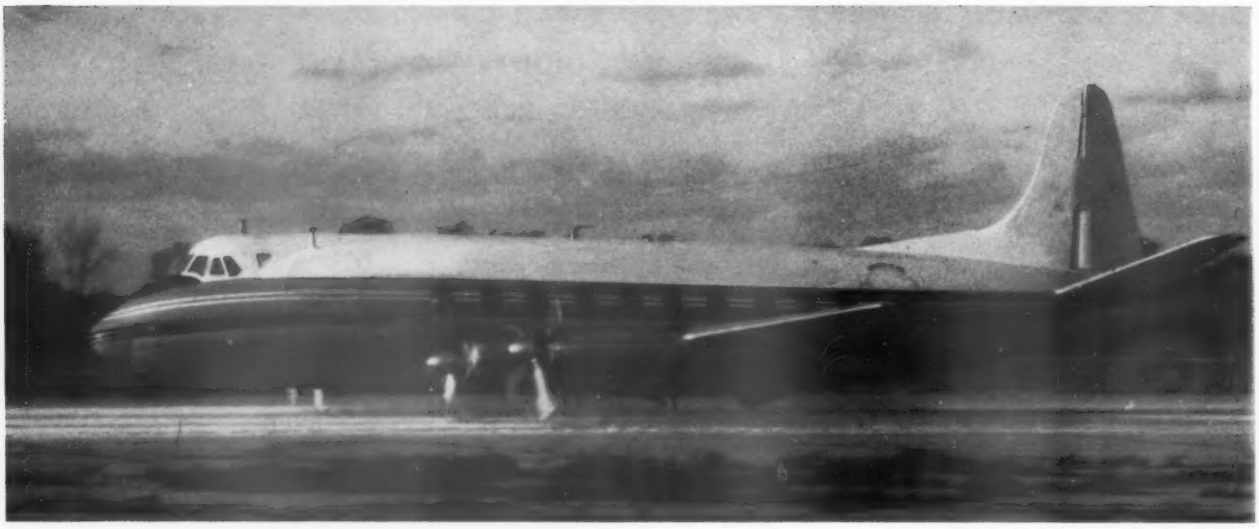
Pilots have reacted to this follow-up procedure in a normal, human manner. Suffice it is to say that they like to be told when they do a good job of work. The cooperation of pilots in the LAX sound abatement project is needed and appreciated.

Through the Air Line Pilots Association regional office in Los Angeles, arrangements have been made to speak briefly to LAX-based pilots at their regular ALPA council meeting where we can assure them of this.

The overall sound abatement problem is explained with the use of charts and graphs and a sincere "thank you" is offered them for their overall cooperation. At such meetings, I stress that under no circumstance should a pilot compromise safety in flight at the expense of sound abatement.

From my personal associations and contacts with LAX jet and piston pilots, I have come to this single conclusion:

They are dedicated human beings. Give them the facts of a problem and they will do their utmost to cooperate.



"To Foam Or Not To Foam"

Adapted from an article

By Jack T. LeBarron

Associate Editor, APPROACH MAGAZINE

WHEN an aircraft makes a forced landing, it is news. When a foam strip has been laid down on the runway before the aircraft lands, it's even bigger news. Publicity has glorified the technique of using foam all out of proportion to the proven value that is derived from its use.

Analysis of the limited available data indicates that the benefits derived from the use of foam are to some degree conjecture. To evaluate the technique it is necessary to apply the small amount of test data, to analyze impact behavior from actual forced landings where foam has and has not been used, and to relate the use of foam for this purpose to its known qualities as a fire extinguishing medium.

Initial confusion is the rule rather than the exception where foaming the runway is suggested. It has become obvious that there are conflicting opinions concerning the best procedures.

An explanation for the conflicting opinions may stem from the fact that foaming the runway for emergency landings is a relatively new technique. Secondly, the use of foam at one single field is so infrequent as to make it appear unnecessary to put instructions on paper.

While fire-fighting foam has been assuming a new function, the reason for its use has also undergone a gradual but important change. The first use of water or foam had been merely to eliminate friction between runway and a cocked nosewheel but it began to be talked about in terms of fire protection. Speculation and attention centered on belly landings and "nose gear-up" landings with the thought that sparks and fires would be reduced or smothered during the slide.

The Real Question

This is the real core of the question, "To foam or not to foam." Unfortunately it is also the part which cannot be answered with a quick "yes" or "no." Due to the numerous variables present in any emergency landing, there is little chance of positively and accurately predicting the usefulness of foam in any given emergency.

A tentative statement by the National Fire Protection Association says a foamed runway is not of proven value as a means of reducing the likelihood of fire following impact nor is it of proven value as a means of mitigating the extent of damage to an aircraft making a wheels-up landing.

However, during the past year the Naval Research Laboratory has been testing the fire-killing qualities of a foamed runway and the team of experts have come up with a general, but informative statement:

"Where there is likelihood of fuel source ignition from friction produced sparks on contacting a runway, the use of a correctly laid blanket of foam as a landing area can decrease the possibility of a fire from this source, by a significant factor in most cases."

One of the first things which came out of a study of available records and material was the absence of fatalities and low injury rate to personnel in "wheels-up" landings on runways, for both bare and foamed surfaces. It follows that the primary objectives and benefits of foaming a runway can be viewed in terms of reduction of aircraft damage rather than protection of life. This is true insofar as normal fire fighting and crash facilities are not compromised by the foaming operation.

Foamed Runway Benefits

There appear to be four possible benefits from a foamed runway.

- Reducing the extent of damage to an aircraft by cushioning the contact between airframe and runway.
- Reducing the coefficient of friction and thus decrease (by permitting slippage) either the deceleration forces imposed on the plane and its occupant or its tendency to swerve.
- Reducing the friction spark hazard which is known to exist on certain dry runways and which constitutes a possible ignition source following impact-imposed damages to duel tanks or system.
- Reducing the extent of fire hazard from a fuel spill following impact

imposed damage.

A fifth benefit may result from marking, unmistakably with a high-visibility material (as the foam is), the pre-selected area for emergency landing of crippled aircraft.

A ratio of one fire per every five belly landings on dry runways is in striking contrast to the record for foam (16 and 24 landings per fire) and at first glance you might say "there goes the ball game" in favor of foam. One point however, throws the whole question open again. In cases where a landing on foam was made, the pilot was able to rid the aircraft of excess fuel, either by burning down, or dumping. On the other hand, the great majority of belly landings on dry runways were inadvertent "wheels-up"—the embarrassing "forgot to put the gear handle down" type.

Question: Was foam responsible for the small percentage of fires? Or was it the light fuel load? Perhaps both factors helped, and if so, to what degree was each responsible? There are no authoritative answers. On the negative side there is an opinion that the only advantages are psychological; the pilot feels that everything possible has been done to help him. This may be the clue which will tip a decision in favor of a foamed runway: The pilots like it. Representative, but slightly more enthusiastic than usual, is this pilot statement: "To the person who first thought of putting foam on the runway for a controlled crash landing I say, 'Thank you!' "

The Decision To Foam

In each decision on whether to use foam, the judgment of a number of people is involved but each emergency is unique in itself and in general.

Discovery of trouble generally begins with the pilot, though there are occasions when air controllers may alert the pilot of an unsafe condition. Discovering the trouble sets the stage but does not begin the operation. Re-cycling the gear or going through the emergency procedures, may finally correct a malfunction, but then again, it may not.

There is a point at which the pilot must announce his difficulty, alerting ground personnel to the possibilities of a belly landing, even though he continues his attempts to get the gear down.

First consideration then, is an estimate of the hours and minutes of fuel remaining. All preparations hinge on this item.

The crash trucks require a basic time to lay the foam. Another length of time is needed to replenish the trucks with foam concentrate and water. A third period must be allowed for them to return to standby positions near the runway. The total is the time for the complete operation. Facilities and layout vary at each airfield so it is impossible to set up a figure to cover all stations. Pre-planning with practice drills is one of the strong recommendations made by the aviation committee of the NFPA.

Only meager information on this subject is available from past occurrences. Few accident reports or crash and fire reports include or discuss the "time required" to complete the foaming.

However quickly the job is done, the depth of the foam being laid must be kept firmly in mind. Test results obtained by the Naval Research Laboratory indicate that an integral foam blanket of two inches in depth is required to do an effective job. Because of this required depth, the rate of application will be slowed down.

Maximum runway area which can be covered to a 2-inch depth with a large crash truck is 4,800 square feet per minute or a total of 10,000 square feet per load. To obtain the required depth a 40-foot wide strip can be laid at a rate of only 120 feet per minute or a total of 240 feet of runway length per load.

Knowing the approximate time required to complete a foam strip gives a double value. The value is obvious when the aircraft fuel state is low. "Under no condition," says one authority, "should a foam protective blanket be applied to a runway if time limitations or physical conditions would prevent all available vehicles from being fully operational at time of the actual touchdown. . . ."

Limit Of Effectiveness

On the other hand, when the landing is to be delayed, the foam should not be laid too early. There is a time limit on the effectiveness of the blanket but various estimates run from one to six hours. Rapid evaporation of water reduces the time, thus temperature, humidity, and wind are all factors.

The known approximate time to ready the runway can be used this way. Subtract it from the pilot's estimated time of landing and you come up with a target time to start the trucks toward the runway. Of course it is imperative that the pilot monitor his remaining fuel and revise his landing time as needed.

Aircraft Configuration

If the fuel state is the first factor to be considered, the configuration of the aircraft must be accounted second in importance. There are only four possible combinations of gear malfunction: all gear up, nose gear up, one main gear up, and main gear up with nose wheel extended, but details of the landing will vary slightly with each configuration.

In all these items the advice and experience of airport personnel is highly useful and their recommendations, based on more intimate knowledge of the specific aircraft concerned, can add refinements to the airfield's foam technique.

Belly Landings

Now comes the matter of dimension and location of the foam pattern on the runway. A wide variety of aircraft has been involved in this type occurrence but a few rules apply to all of them. (At present, studies are being conducted into the feasibility of using field arresting gear on commercial airliners forced to make a wheels-up landing.)

First, don't waste foam by starting too near the threshold or touchdown end of the runway. Normal approach speeds should be used but even if the pilot aims for a normal touchdown point with the landing gear retracted, first contact will be further down the runway than expected. A slight floating from ground effect will also tend to add distance to the touchdown. Thus, the first thousand feet at least, need not be foamed.

There are too things the pilot should strive for in a belly landing. One is a smooth touchdown and the other is to make first contact in the foam area. It does not appear that the touchdown offers any difficulty. With few exceptions, the pilots experiencing a wheels-up landing have remarked on the absence of any touchdown shock.

As to the importance of making the touchdown in the foam, tests show that if spilled fuel is ignited by touchdown and sparking on a dry runway, merely sliding into the foam cannot extinguish a fire.

The length of the foam strip is of course, going to be linked to the estimated distance the aircraft will slide.

There was no material on this aspect readily available but a second look at the wheels-up landings gave some information—using both inadvertent and emergency landings on foam. While average slide distances were charted, another interesting generality also resulted. In several accidents there had been speculation that the distance on foam would be appreciably greater than on a dry runway. A comparison of the two groups showed this was not so; whether dry or foamed, the slide

distance will be roughly the same. Engineers found only a five per cent difference in sliding between a foamed strip and a dry concrete runway.

Of course these figures cannot be guaranteed and must be considered simply as a guide. At any rate, they are the most practical and realistic ones which could be found.

Heavy Multi-Engine Aircraft

For heavy multi-engine aircraft, such as four-engine transports, insufficient information was available to find an average. Some individual cases do at least provide a slim handhold for the man who needs to issue an order to the crash crew. For example, a DC-7 will average a slide distance of 2500 feet.

Following a DC-7 wheels-up landing a civilian group recommended the following minimum foam strip: "At least 60 feet wide, four inches thick, and at least 2,000 feet long, or one-half the landing distance at maximum landing weight. Foam should start at a point 1,500 feet from the runway threshold, or for runways greater than 6,000 feet, at a point one-quarter the runway length from the threshold. . . ."

Air Force experience with jet bombers has produced a rule of thumb which may provide some guidance for commercial jet belly landing. This recommended foam pattern is 3,000 feet long, starting 2,000 feet from the approach end.

Foam Dimensions

The ideal operation has been described as one where the aircraft touches down in foam and stops before reaching the end of the blanket. It would be difficult to achieve this in every case without flooding the airport with foam, but reasonable success can be gained by taking the average slide distance and adding from two to four hundred feet (or whatever time permits) for the total foam strip.

For large multi-engine aircraft, a pattern as wide as the distance between the outboard engines plus 10 feet on each side is recommended.

If there is time, or a desire to increase the width, the "runout" end of the foam strip should receive first attention. In the early stage of the slide there is some directional control from the rudder. Toward the end there is none and a swerve sometimes develops, enough to move the aircraft close to the edge of the runway.

Whatever is done in regards to length, width and starting point of the foam, it must be relayed to the pilot of the distressed aircraft. Normal communications through the tower will be used in the initial contacts but during the final phase of the operation the use of a runway portable has proven superior. A pilot, acting as LSO, is able to provide better advisory information as the aircraft nears the runway and foam. This assistance is especially helpful at night.

Marking the beginning of the foam with a vehicle parked near the runway is another bit of assistance to the pilot. At night the vehicle can be parked so the lights shine across the runway.

A gear-up landing will always foul a runway. Even if the crash crew never worked more swiftly and efficiently, it may be too long for low state jets. Now consider that a belly slide is shorter than a normal landing roll and you come up with the interesting possibility of using a non-duty runway for the emergency landing on foam, even if it might be too short for normal jet operations.

Nose Wheel Retracted

With the nose wheel retracted or trailing, and where arresting gear will not be used, the nose is held off the runway until the speed drops about 20 to 30 knots below the touchdown speed. As a general rule the nose should be lowered gently to the runway before elevator effectiveness is completely lost to prevent a sudden uncontrolled impact. This is true even if the foam has not been reached. It is of interest to note that this type emergency has caused limited or minor damage in about half the cases.

There is no need to modify the normal VFR approach, either in speed or touchdown point, when landing without a nose wheel. The crash crew should start foaming at least 2,000 feet from the approach end of the runway and if time is a factor, the strip can be begun 3,000 feet from the approach end without compromising the foaming operation. Actually, from the evidence at hand, if the pilot touches down from 500 to a 1,000 feet past the threshold it appears the 3,000-foot figure has some advantages. Even if the nose should be lowered before reaching the foam, friction pressure will normally be lighter than at the end of the slide where the full weight of the aircraft is on the nose section.

Jets and large multi-engine prop types will require at least 2,000 feet. Here again it is hard to pinpoint a distance which will apply in every case and the 2,000 feet will simply take care of most aircraft.

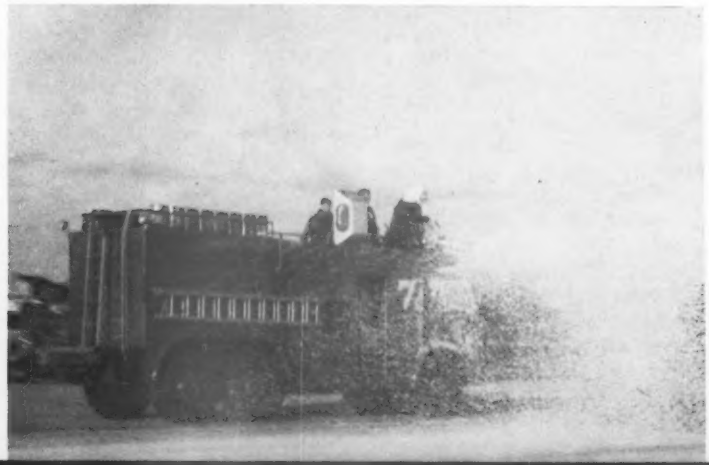
Rudder and brakes allow some directional control so a narrow strip of foam is practical; but at least 10 to 15 feet allows for more error in lineup.

If a wider strip is deemed necessary it may be used without fear of compromising braking action. Air Force tests indicate there is a loss of only three per cent in tractive efficiency from foam on a concrete surface. This information is of interest where there is a question of allowing aircraft to land before foam can be removed from the runway.

Trouble with the main landing gear runs through many variations, ranging from a blown tire to instances where one gear is fully retracted. There is a need to narrow this general subject into several categories which are more easily handled. A natural division comes with the question of whether or not the malfunctioning gear offered any support in the landing roll. Thus a landing gear strut, broken off at the axle but locked down, would be considered for the purpose of this article as offering support in the landing.

This leaves a category where the gear offered no support; wheel fully retracted, gear trailing, "unsafe" indication (possible complete collapse on touchdown) or hanging free with the drag links broken.

Such a landing is significantly different from a belly landing or nose wheel-up landing. When one main gear



is up, the path and actions of the aircraft are more unpredictable. Something you can predict at least, is a swerve in the rollout. It may be a gentle arcing to the side of the runway or a dust-raising ground loop. The plane might stop on the edge of the runway or go limping cross-country like a wounded bird who refuses to give up.

One similarity with the belly landing is the low injury/fatality rate connected with previous "one up and two down" landings. However, the possibilities of pilot injury appear to be greater due to the unpredictable aspect of the landing roll. Almost invariably the aircraft will swerve to the side which has the malfunctioning main gear; left gear up, swerve to the left, etc. Therefore the nature of the terrain next to the runway and the proximity of obstacles and positioning of crash equipment must be taken into account.

Main Gear Up—Nose Extended

Landings where only the nose wheel is extended and the main gear is up, are infrequent but not unusual. Past experience shows they may be handled the same as a belly landing, as far as foaming is concerned.

If for example, the aircraft is forecast to go to the left, what sort of ground lies on that side of the runway? Is it level or steeply sloping, rough, smooth, dry or swampy? Any ditches, holes or embankments? Are hangars, parked aircraft or fuel pits nearby? Most of the pilots involved in these swerves commented on the complete lack of directional control once the wing drops—there's little you can do if the aircraft heads toward something immobile.

In the event that a swerve off the duty runway would be highly undesirable and no other suitable runway is available, an alternate choice is a belly landing with all gear retracted.

At the present there is insufficient information to recommend one technique over the other as regards damage to the aircraft and the choice of a belly landing stems from a desire to minimize any possible hazard to personnel.

All this may seem far removed from the subject of foaming a runway for emergency landings but now, when it is brought up again, you can begin to see that foam is of little practical value for a landing with one main gear up. Only when the aircraft wingtip begins to drag does the foam get into action and this area of contact is small. Unless the complete width of the runway is foamed, the wingtip is soon back on dry concrete as the aircraft swerves toward the dragging wing.

Where will the aircraft leave the runway? This is really unpredictable.

Here is an appropriate spot to note a difference between "one main gear up" landings and those where the disabled gear offered some support in the rollout. In fact, the amount of swerve after touchdown seems to be linked to the condition of the disabled gear; the closer the gear to a normal condition, the less the severity of the swerve. Increased directional control through wheel braking accounts for part of this fact.

Compared to a landing where runway contact on the disabled side is made by a wingtip, foam may be of more value when a portion of the disabled landing gear (brake assembly, axle, sheared strut) is sliding on the runway. This is, in theory, due to the type of metal (steel versus aluminum) in contact with the runway and the associated friction sparks plus the proximity of hydraulic lines.

Once the landing portion of the emergency is over, that is, when the aircraft stops and the crew retreats from the cockpit, the crash crews move in. What happens then seems to depend on the individual crash crew. In a series of accident reports of the same type, where no fires were reported, there were photographs of planes with no foam on them, partially foamed aircraft, and dripping, foam-covered hulks which only resemble airplanes.

Maintenance Procedures

After an emergency landing, some of the factors which will influence foam removal and maintenance procedures are position of jet intakes (wing or fuselage), type of gear malfunction (possible foreign object damage from sliding on the nose or a swerve off the runway into the dirt), and placement of foam on the aircraft by the crash crew. So far as is known at present, it remains for the individual unit to decide on appropriate engine treatment.

As a matter of fact, "local option" or decision applies to much of the foamed runway story. Even with further accumulation of knowledge and experience there are some aspects which can hardly be reduced to a rigid, mechanical procedure. The variables involved make no two situations exactly alike, but from evidence distilled out of numerous tests and previous emergency landings, it is possible to draw some brief and general conclusions.

Of the possible benefits from a foamed runway previously discussed, two can be eliminated. Foam itself cannot reduce damage by "cushioning" the contact between airframe and runway. Neither can it materially reduce deceleration and swerving forces by permitting "slippage."

- Absence of foam in a runway does not automatically eliminate the chances of a successful (no fire) emergency landing but a correctly laid foam strip decreases the possibility of a fuel fire from friction sparks.
- Foam should not be laid if normal crash rescue or fire-fighting capabilities of the station will be compromised by the operation.
- The type of landing gear malfunction will determine the desirability of laying a foam strip, as well as influence the dimensions and location of the strip.

Guide lines for emergency landings can be improved but as always, there is no substitute for clear-headed, timely and accurate action in the cockpit and on the ground.

By Glenn L. Bryan, Ph. D., and Joseph W. Rigney, Ph. D.

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UNDERSTANDING passenger emotions is becoming increasingly important. Not only are more people traveling by air, but each new generation of transports is capable of carrying greater numbers. A brief investigation of today's passenger behavior was conducted in an effort to forecast the nature and extent of passenger problems in tomorrow's air lines. Stewardesses who fly with air line passengers have a unique opportunity to observe them. Therefore, stewardesses were asked to contribute information based on their experience. Data reported here was obtained from these young women by (1) informal interviews and (2) by questionnaires.

One Hundred and fifty-six stewardesses[1] from the three major air lines operating out of Los Angeles completed the questionnaire forms. As a group, they had served a median time of 33 months, probably somewhat longer than the average. Twenty-nine had regularly served on long flights over water. Almost all of them indicated that they had been present as a stewardess during some emergency, major or minor.

The questionnaire itself consisted of three parts. The first four items were biographic in nature. The next thirty-seven were of the opinion survey type. The final fourteen items sought descriptions concerning the most extreme passenger behavior the stewardess had witnessed, and a description of the situation in which it occurred. Sample items are shown in Figure 1.

Stewardesses Questioned

The questionnaires were completed voluntarily and anonymously. They were distributed and collected by the chief stewardess for each air line in the survey. In tallying the responses to the items, the decision was made to interpret only those alternatives in the opinion survey which evoked consistent responses with frequencies significant beyond the .05 level. Nineteen of the thirty-seven opinionnaire items exceeded this interpretability criterion. The results obtained from the opinion survey portion of the questionnaire permit the following general statements:

First of all, despite the fact that being an air line passenger throws one into continued close contact with a sizable number of total strangers with widely varied backgrounds and interests, most passengers are well-behaved. However, the group nature of the enterprise does seem to influence the behavior of individuals in minor ways. For example, young men traveling in groups are more likely to create disturbances than similar individuals traveling alone. Men traveling in groups are more likely to make suggestive proposals to stewardesses than are men traveling singly. But, it should be emphasized that most of the hostesses regarded these proposals as good-natured banter rather than improper advances. As a final point regarding social faciliation, two-thirds of the hostesses felt that one or two people were usually responsible for setting the emotional tone for the entire cabin during a flight. Many felt this could be accomplished indirectly by the hostess herself.

A second general conclusion is that air line passengers behave much the same in the air as they would on the ground. For example, during preliminary interviews, it was suggested that some passengers resembled the fabled henpecked husband who was a tyrant at the office. Consequently, a number of items relating to this point were included in the opinion survey. The results of the survey gave very little support to the idea that "mousey" males become tigers when they purchase an air line ticket. In general, there was little evidence of drastic shifts in one's personality as a consequence of becoming a passenger. (Of course, this has to be a guess since there was no controlled opportunity to compare their behavior in the air and in other circumstances.)

Group Tendancies

There is an exception to this generali

zation. Air line passengers as a group tend to behave in a very dependent fashion. Many ask the stewardess's permission to do things that are obviously all right or ask questions they could answer for themselves. These feelings of dependence have been exploited in an emergncy, when anxiety has been dissipated by a few confident words from the aircraft captain, and emergency instructions given by the hostesses have been followed unquestioningly.

The data revealed only minor sex-related differences with respect to behavior and emotionality. On the specific points covered by the survey, it appears that members of the fair sex are good passengers. The principal differences found between the behavior of the two groups are the tendencies of men to get friendly, to prefer liquor as a beverage, and to complain that they have not been served enough drinks.

One hundred and fifty-six instances of extreme emotional behavior were collected. As shown in Table I, fear was the most frequently mentioned emotion. Three types of fear were distinguishable in the incidents recounted.

Table I. Types of emotion displayed by passengers in 156 reported incidents.

Fear: 67 Cases	
Sources of fear:	
Chronic fear	28
First flight	10
Turbulence	11
Real emergency	12
Other	6
Anger: 57 Cases	
Sources of anger:	
Excessive use of alcohol	19
Poor service	16
Hostile Personality traits	12
Personal frustration	10
Sorrow: 11 Cases	
Other: 21 Cases	

Table II. Action of intervening Stewardess in 86 per cent of 156 reported passenger incidents in flight.

Reason	51%
Threaten	3%
Distract	21%
Call captain	19%
Order	4%
Render First Aid	2%

[1] The terms stewardess and hostess are used interchangeably in this paper.

There were thirty-eight cases of fear (twenty-eight chronic fear of flying and ten first flight) which showed up without any precipitating reason; that is, the aircraft was operating normally, and flying conditions were good. There were eleven cases of acute fear during turbulence when danger was assumed to be present. There were twelve cases of fear during true emergency when danger actually was present. There appeared to be some tendency for chronic fear to become controlled as the flight progressed. However, not all passengers were able to endure it that long. In one incident, just as the plane was about to take off, a middle-aged male passenger opened an emergency window, jumped out of the aircraft, and ran back to the terminal.

Anger was mentioned almost as often as was fear (fifty-seven cases). The bulk of the nineteen serious incidents involving cursing and fighting were associated with excessive drinking. For the most part, the passengers involved had brought their own alcohol aboard, either external to their persons or otherwise. In sixteen other incidents, the passenger was angered because of treatment allegedly received from the air lines. Twelve of the obstreperious characters were judged just "hard to please and easy to rile." Ten were laden with troubles unrelated to the flight. A classic case of this type was reported by one stewardess.

The passenger was irate with people in general that day. He had had confirmed space in one flight but had not checked in, and had lost his seat. His baggage had been lost. His secretary was pregnant. His wife had left him. And, he had not slept in four nights. He felt better after talking and eating lunch.

There is a special kind of trouble that passengers bring aboard with them. To a certain extent, air lines are especially likely to encounter this problem, due to the fact that they are uniquely capable of swiftly transporting people over vast distances. The trouble referred to here is death in the family. Eleven incidents of uncontrollable grief associated with the death of a loved one were related. In addition, several of the incidents of extreme and unreasonable fear occurred when people who were afraid to fly were compelled to do so because of death or illness in the family. This group of passengers will probably always require special handling and support.

Emotional Situations

Finally, twenty-one situations that provoked strong emotions are worthy of mention even though they can occur anywhere and are not specifically related to flying. It is important to recognize that such incidents also occur in flight. As example of this: A man died in flight and his wife was grief-stricken. A feverish child developed convulsions, and his mother was terrified. Several epileptic seizures and phychotic episodes were reported.

Table II indicates the actions taken by the stewardesses in an effort to counter the hyper-emotional behavior of the passengers in the incidents described. In 86 per cent of the cases, the stewardess intervened. Usually she tried to reason with the passenger, placate him, or distract him. In some cases, it was necessary to become stern and threaten him with punishment (which included the threat of calling the captain). In 19 per cent of the cases the captain actually was summoned. By and large, the stewardess's actions caused the passenger to regain control of his emotions.

So it seems that stewardesses are dealing rather well with passenger emotions at the present time. What about the future? What is the most reasonable prediction for the era when planes travel even faster and carry even larger numbers of passengers? What may we expect from the passengers of that era?

What About The Future?

Probably passenger behavior and emotions will be less of a problem in the future than now. This is based upon the assumption that future aircraft will be quieter and more stable. They will operate at greater distances from earth, so there will be even fewer sensations of motion. Many of the flights will be swifter; hence, the passengers will be aboard for shorter periods of time. In addition, numerous non-stop flights will minimize takeoffs and landings, which seem to create more passenger anxiety than does cruising at altitude. Furthermore, service should continue to improve with the years, thus eliminating another cause of passenger misconduct.

On the other hand, increases in the number of passengers aloft will increase the likelihood that one of them will become ill, have a baby, or die. Provision will have to be made to cope with these situations. In any event, it appears that the presence of the friendly, efficient hostess to cheer up the grouch, calm the fearful, and serve as a mother surrogate in the face of actual danger will continue to be a requirement.

Special Report:

Department Of Defense Report On The Role Of MATS In Peace And War

THIS report answers the President's request for a study of the military role performed by the Military Air Transport Service (MATS) in peace and war. It sets forth a proposal for improving materially national airlift readiness. This proposal is based on investigations, analyses, and considerations of factors relating to the establishment and operation of MATS in its present form; the relationship of commercial carriers to the military airlift support operations, and, most importantly, the military requirement for maintaining a ready airlift force.

The report is based on the comprehensive review and analysis of date pertinent to airlift requirements and operations of interest to the Department of Defense. It relies heavily on data made available to the Office of the Secretary of Defense by the various elements of the Department of Defense, including the Joint Chiefs of Staff. It takes into account Congressional views as well as views formally presented by the representatives of the air transportation industry of the United States.

While recognizing that a sizable amount of military airlift capability is maintained outside of MATS, this report deals almost exclusively with MATS, its operations, its practices and its augmentation by commercial carriers.

Considered in the report are the reasons for establishing MATS under the Single Manager concept. The ideal airlift situation from a military point of view is discussed as is the present operation of MATS. Because of its importance to the military role of MATS, the Civil Reserve Air Fleet (CRAF) program is also analyzed.

Conclusions

Military Airlift Requirements. The size of MATS and the extent and nature of its operations are keyed to approved military wartime airlift requirements. These requirements break down into (1) critical or hardcore[1] requirements which because of their nature or the mission to be supported must move in military operated aircraft, and (2) other essential or civil eligible requirements which can move in either military or civil operated aircraft.

Hardcore requirements are applicable in general war situations as well as situations short of general war. Satisfaction of hardcore requirements (general or limited war) is vital to the successful implementation of military strategy. Therefore, MATS must possess adequate capability at all times to meet these requirements on an effective and timely basis.

Commercial carriers do not now have adequate air cargo capability to accommodate those approved military airlift requirements which could move during emergencies in commercially operated transport aircraft.[2]

MATS—Present Size and Operations. MATS should consist of a modern military air transport nucleus (hardcore) capable of meeting effectively those airlift requirements which by nature and timing must be moved by military aircraft. Its present airlift capability is considered quantitatively adequate to meet all planned (hardcore) requirements. There are qualitative deficiencies in military airlift capability, however, which can be overcome only through modernization. This modernization is essential and urgently required to (1) improve airlift effectiveness, and (2) reduce the cost of operation of the MATS portion of the total required airlift.

In order to maintain a proper state of readiness, the MATS over-all system, including the functions of loading, unloading and maintenance, must be exercised at an appropriate rate. It is in the national interest to use productively the airlift necessarily generated in maintaining a ready D-Day airlift force. MATS now has to plan to meet sizable volumes of military airlift requirements which are beyond the present capability of commercial carriers. However, as commercial carriers equip with modern long-range economical cargo aircraft, the situation will change and adjustment in the size of MATS can and should be made insofar as the increased civil lift can be available with certainty to meet emergency military requirements that can be handled by civil aircraft. The savings from such adjustments and reductions in commercial rates made possible by modern economical cargo aircraft should largely offset any additional cost that may be involved initially in making progressively greater use of commercial carriers for the movement of routine logistical supply.

[1] Airlift requirements which must move in military aircraft, manned and operated by military crews because of limiting physical characteristics such as size or dangerous properties. Included in this category are special military deployments involving nuclear retaliatory forces, the SAC post strike recovery mission, tactical deployments movement of missiles, special munitions, etc.

[2] These are the so-called "civil eligible" requirements.

Military Readiness. Existing deficiencies in cargo airlift capability adversely affect military readiness. There is not sufficient commercial cargo capability to accommodate the military wartime traffic which could otherwise move in commercial aircraft. The quantitative deficits in commercial capability to meet wartime needs are such that the continuity of the overseas pipeline cannot be assured in cases of emergency and forces whose operations are geared to airlift support may be deprived of airlift at a time of urgent need. To the degree practicable, therefore, regular re-supply service and routine personnel movements should be to an increasing degree contracted to commercial carriers to encourage the buildup of commercial cargo capability.

MATS Versus Commercial Airlift Utilization. The MATS versus commercial airlift utilization disagreement stems from adherence to normal procurement policies and practices in obtaining commercial augmentation airlift, as well as MATS operations over routes parallel to those of comercial carriers. This problem involves CAB policy and small business considerations as well as Defense Department procurement policies.

Civil Reserve Air Fleet (CRAF). The CRAF program has been rapidly maturing during the past 18 months and it appears that the basic groundwork has been done and more rapid progress is now assured. Major shortcomings remain, however, in that no provision is made for partial mobilization or use in conditions short of general war and some of the aircraft are not yet modified to CRAF standards.

Orientation of MATS. MATS should withdraw from routine channel operations to the extent that this function can be performed effectively and at reasonable cost by commercial carriers without detriment to the hard-core mission or unnecessary duplication of expenditures for airlift service. MATS is presently reducing its operations by the elimination of three C-97 squadrons during the coming year. Further reductions and adjustments in the size and operations of MATS should be tied to (1) approved hard-core requirements; (2) a program for the replacement of MATS present piston aircraft with modern turbine-powered aircraft; and (3) the guaranteed availability at reasonable rates of modern, economical, long-range civil cargo aircraft to support defense requirements.

Procurement of Commercial Augmentation Airlift. Current airlift procurement policies and practices are not accomplishing the desired results in promoting a healthy growth of United States overseas commercial cargo airlift capability. With Congressional approval, if necessary, they should be better adapted to reflect the long-term interest of the Department of Defense in commercial airlift capability required for effective and economical support of military forces.

Policies and practices should (1) encourage modernization and growth of commercial cargo capability; (2) insure uninterrupted commercial airlift service to the Department of Defense at all times; and (3) require that those carriers providing augmentation airlift provide on request during emergencies a fixed percentage increase in airlift capability over their normal commitment to MATS.

Presidentially Approved Course of Action[3]

1) That MATS be equipped and operated in peacetime to insure its capability to meet approved military hard-core[4] requirements in a general war and in situations short of general war, and such other military requirements as cannot be met adequately by commercial carriers[5] on an effective and timely basis.

2) That the modernization of MATS hardcore military airlift capability be undertaken in an orderly manner consistent with other military requirements and in keeping with the objectives of the paragraph above.

3) That MATS routine channel traffic (regularly scheduled, fixed routes) operations be reduced on an orderly basis, consistent with assured commercial airlift capability at reasonable cost, and consistent with economical and efficient use, including realistic training, of the MATS capacity resulting from the provisions of Paragraph 1 above.

4) That as commercial carriers make available modern, economical long-range cargo aircraft and as further orientation of MATS to the hardcore function is effected, increased use should be made of the services of such commercial carriers.

5) That, with respect to services overseas and to foreign countries, commercial augmentation airlift procurement policies and practices be better adapted to the long-range Department of Defense requirements, so as to encourage and assist in sound economic growth, development, and maintenance of an increased air cargo capability; that there be explored the feasibility of:

(1) Expanding the provisions of Paragraph 3 above to apply to other MATS operations in addition to routine channel traffic;

(2) (a) Procuring commercial cargo airlift only from air carriers, as defined in Section 101 (3) of the Federal Aviation Act of 1958, and increasing the amount of such airlift obtained at tariff rates filed with the Civil Aeronautics Board as distinguished from airlift obtained through the practice of advertising for bids,

(b) Requiring that all cargo carried by commercial carriers be so moved;

(3) Entering into longer term contracts for MATS traffic; and

(4) Giving preference in the movement of MATS traffic to those commercial carriers:

(a) Who are effectively committed to the Civil Reserve Air Fleet (CRAF) program;

(b) Whose facilities and equipment are most advantageous to the emergency needs of the Department of Defense; or

(c) Who are demonstrating a willingness and ability to acquire uncompromised cargo aircraft; and that legislation be sought if necessary to permit accomplishment of any of the foregoing considered desirable.

6. That since the development of long-range, economical turbine-powered cargo aircraft is essential to MATS modernization and to long-range evolution of a modern civil cargo fleet, suitable arrangements should be made for Defense and industry participation in the costs of such development.

7. That purchase loan guarantee legislation, if proposed, contain provisions to insure the immediate availability of cargo aircraft covered thereby to meet military and mobilization requirements.

8. That consideration be given to equipping certain Air Force Reserve and Air National Guard units with transport aircraft that might be available from MATS excesses as augmentation forces for MATS in time of emergency.

[3] Resulting from the report of the Department of Defense to the President.

[4] Airlift requirements which must move in military aircraft, manned and operated by military crews because of special military considerations, security, or because of limiting physical characteristics such as size or dangerous properties. Included in this category are special military deployments involving nuclear retaliatory forces, the SAC post strike recovery mission, tactical deployments, movement of missiles, special munitions, etc.

[5] Wherever used herein, "commercial carriers" means U. S.-owned commercial carriers.

9. That the roll of CRAF be re-examined with the objective of insuring optimum effectiveness and responsiveness of commercial airlift services to the Department of Defense under all conditions.

Military Air Transport Service (MATS)

Single Manager Operating Agency Airlift Service

A. Establishment: The Secretary of Defense issued a directive[6] to establish airlift services under the Single Manager concept. This directive in its statement of purpose and objectives and again in its statement of general functions pointed to the fact that commercial airlift service is to be used to augment the airlift capacity of the agency (MATS) as required in peacetime on a basis which will contribute to the sound economic development of an increased modern commercial airlift capacity and enhance the ability of commercial carriers to operate with maximum effectiveness in support of the military forces in time of war. This directive also points to the fact that the capability of commercial carriers is to be considered in determining the level of military airlift capability required.

An important factor in the decision to establish airlift under the Single Manager concept was its diffusion within the military departments and the reliance placed by the services in wartime on a single source—the old MATS—for airlift service.[7] MATS—Single Manager Operating Agency for Airlift Service—was created in an effort to bolster airlift readiness and improve the effectiveness and over-all economy of airlift support provided to the Armed Forces. Today the bulk of the long-range, strategic military airlift capability resides in MATS. However, there is considerable airlift capability maintained within the military services outside of MATS.

Reference to the total number of aircraft assigned to MATS, as is often the case when MATS is being pictured as the "world's largest air line," is misleading. Of the 1,245 aircraft assigned to MATS, only 511 are in the common user or strategic airlift fleet. The majority of the remainder are not even transport configured, but rather are converted bombers, fighters, amphibians which are required in the mission of the MATS technical services.

B. Mission: In creating the Single Manager for Airlift Service, one of the principal functions assigned to the Secretary of the Air Force and, in turn, to MATS was that of maintaining and operating a military airlift service system designed to maintain an adequate emergency readiness position and carry out realistic training programs. This function is the key to the MATS mission of providing airlift service as required to the Department of Defense under all conditions.

Airlift For The Hardcore Mission

Capability, Operation, Assignment, Augmentation

The ideal airlift situation, from a purely military point of view, would be to maintain at all times within the Armed Forces the total capability to meet wartime requirements. This would obviously be wasteful for the national economy, particularly in view of the capability represented by the commercial carriers of the United States and their willingness to make such capability available to the Department of Defense.

In the context of the philosophy of maintaining within the Armed Forces only the resources of capability essential to the effective implementation of military strategy, MATS ideally should perform only the "hardcore mission" leaving to the commercial carriers the job of providing airlift for routine logistic supply and normal personnel movements in conformance with criteria prescribed by the Department of Defense. This is a realistic delineation between military and commercial carriers for programming purposes. However, for peacetime operations economic considerations will dictate some adjustment.

A. Capability: The amount of airlift capability required to be maintained in peacetime within the military services has long been in dispute. Part of the dispute stems from differences of opinion as to what is required, and part arises from the lack of clear definition of the role of military airlift.

Hardcore requirements for general or limited war can be calculated on a "sortie" basis. Therefore, determinations as to the amount of airlift capability to be maintained can be made with reasonable accuracy. This same accuracy is not possible under present MATS concepts wherein requirements and capabilities are expressed in terms of ton and passenger miles and are based to a large extent on "factors" rather than specific detailed plans.

The hardcore airlift mission usually has to be conducted on a precision basis. In general war, it involves retaliatory forces to a large extent. The necessity for meeting these requirements on an effective and timely basis is unquestioned. However, it appears unrealistic to plan to meet these hardcore requirements in general war on the basis of fitting them into regularly scheduled air line type operations. For limited war situations, the fact that MATS is engaged in some channel traffic operations is beneficial because it provides additional flexibility. However, if the primary emphasis is on channel operations as it is now, there could be disruptions in the case of emergencies in normal scheduled operations which military services depend on for regular logistic support. The severity of such disruptions would depend on the nature and extent of the emergency.

B. Operation: This peacetime operation of the hardcore airlift capability should be consistent with the required wartime operation. It should, therefore, be limited largely to training and support directly related to the hardcore mission. Ideally, it should be used only: (1) to deploy initial elements of strategic and tactical units in emergency; (2) to move such other traffic which because of its size, nature or characteristics requires military airlift; and (3) to maintain the proficiency essential to precision implementation of emergency plans. In short, the military airlift must be ready to respond to both limited and general war emergencies with maximum effectiveness and timeliness.

C. Assignment: The optimum assignment of military airlift capability from a user point of view would provide each bonafide military claimant for airlift with a precise amount and mix of airlift capability necessary to meet his requirements on the desired basis. Thus, each claimant would be able to plan on a specific amount of lift without fear of having it diverted from other tasks. However, this would preclude effective distribution and assignment of capability in actual war emergencies because of the diffusion of control that would result. More important, however, over-all force mobility would be drastically reduced. The Single Manager for Airlift Service was established as a means of assuring adequate flexibility and mobility.

D. Augmentation: Because of the nature of the hardcore requirements, it is desirable that augmentation of the hardcore airlift capability come from within the Department of Defense. Air Force Reserve and Air National Guard units equipped with transport aircraft could serve bene-

[6] DOD Directive 5160.2, December 7, 1956.

[7] The Army was 100 per cent dependent on MATS for airlift; the Navy 64 per cent; the Air Force, 87 per cent. ("Single Manager Assignment for Air lift Service," Presentation by Raymond M. Kenney, Jr., OASD (S&L) before The Armed Forces Policy Council, September 18, 1956.)

icially in providing primary backup for the active military airlift force.

The use of these units as "augmentation for the hard-core military airlift force would offer several advantages; namely, (1) commercial carriers would need to perform only a logistical support role; (2) a transport role for the Air National Guard and Reserves would appear realistic; (3) aircraft equipment problems now associated with these units could be resolved quickly and with optimum economy through the use of aircraft made available by MATS; and (4) in addition to these direct advantages, the use of the Air Reserve and Air National Guard as augmenting airlift forces would contribute to the stability of airlift operations outside of MATS as well as the role of commercial carriers.

Military Air Transport Service

Current Organization, Operations, Capability, Commercial Augmentation Airlift, and Growth

A. Organization: The MATS airlift function is currently organized on a regional basis with the transport Air Forces having responsibilities for operations in particular areas. There is no distinction organizationally between the airlift roles of MATS, direct or indirect support of combat forces, hard-core or routine logistical airlift.

B. Operations: The operations of MATS in peace as well as war are oriented primarily toward scheduled, fixed route, air line type operations. Under present MATS operating concepts, disruption of the overseas logistic pipeline occurs whenever and to the extent military airlift capability is withdrawn from channel operations. The adverse effect on the readiness of forces dependent on airlift for support and from whom capability may be withdrawn is obvious and will vary depending on the extent of diversion.

As a result of the deployment of the Tactical Air Command Composite Air Strike Force to Formosa last year, MATS had to call upon the transport forces of the Strategic Air Command, Tactical Air Command, and the Air Material Command for assistance in maintaining the overseas logistic pipeline. In spite of this and the fact that the deployment of the TAC unit was a relatively small operation, a fifteen-day backlog of priority traffic generated at one of the major U. S. aerial ports of embarkation.[8] The fact that it is necessary for MATS to seek additional capability from other military airlift forces points to the need for ascertaining the desirability of further integrating military airlift capability.

The current air line-type operation conducted by MATS, aside from its direct military implications, is the genesis of the bulk of the criticism aimed at military airlft operatons. Much of the criticism is self-serving but, to an ever increasing extent, it represents the concern of Congress and others over the need for airlift readiness and the operation by the government in areas which might be served by private enterprise.

The feeling against the MATS air line-type of operation has become so strong of late as to constitute an effective block against the modernization of military airlift capability. The Congress refused to appropriate funds requested in the Air Force budget for Fiscal Year 1960 for the procurement of jet cargo aircraft.[9] The following extract from the Congressional Record indicates, however, that opposition to MATS modernization can be overcome: *If the Department of Defense will present a comprehensive plan for a modern military air transport program, and will give some concrete evidence of their stated intention to get MATS out of the air line business, I am confident that they will find strong support in the Congress."*[10] This modernization obviously is not only desirable but necessary if the Department of Defense is to have the capability necessary to provide effective airlift support to the Armed Forces under all conditions.

The continuance of the MATS present type of operation will strengthen the objections to MATS and the modernization of military airlift. If continued, it could prevent the transfer to combat forces of sizeable manpower and financial resources now used by MATS which could otherwise be effected.

C. Capability: In the case of a limited war, there are a number of contingencies which could have significant requirements. It is infeasible to select any one situation to the exclusion of the other situation of equal validity in establishing requirements. To do so would deny flexibility in logistical planning. Therefore, a median for the extreme situation which can be conceived was selected as a basis for analyzing the adequacy of airlift for limited war situations. This is a reasonable basis for planning, and the airlift needs resulting therefrom require an airlift capability of significant magnitude.

The airlift capability now assigned to MATS is adequate to meet the hardcore requirements of general war and hypothetical hardcore requirements for limited war.

MATS now has additional capability over and above that required for the hardcore mission. This capability is applied against that part of the over-all military airlift requirement which could be moved by commercial carriers but for which such carriers do not now have the required capability.[11] There are substantial airlift deficits in the commercial carrier capability of civil eligible requirements in both general and limited wars insofar as civil eligible cargo traffic is concerned.

For the critical period of a wartime situation, hard-core airlift requirements calculated on a sortie or one trip per aircraft basis would require a significant portion of the aircraft presently operated by MATS.

In analyzing the adequacy of transportation capability for overseas movements during emergencies, care must be exercised to assure that in developing requirements data consideration is given to the availability of both ocean and air transport capability and that an appropriate balance, consistent with national interest, is maintained.

While the MATS airlift capability is quantitatively adequate for hard-core requirements, it is seriously deficient quality-wise and greatly dependent on the availability of intermediate island bases. The C-133 is the only modern transport aircraft in MATS. The remainder are powered by reciprocating engines. As cargo carriers, they are seriously limited in terms of range and payload. The workhorse of the military fleet, the C-124, is rapidly approaching obsolescence and a critical engine supply situation. While MATS present aircraft would continue to have considerable airlift capability if denied island bases in the Atlantic, none would have a capability to overfly the Pacific Island bases with a payload. This latter is an extreme requirement which can be fulfilled for cargo with the present state of the art only at the cost of considerable payload.

Commercial cargo capability is extremely limited for emergency purposes and qualitatively inadequate. Even with all the cargo aircraft in the commercial industry capable of trans-ocean operations, commercial carriers can accommodate only a relatively small percentage of the military traffic that can move in either military or commercial air-

[8] Memo to the Secretary of Defense from the Secretary of the Air Force, Subject: "Airlift," dated April 14, 1959.
[9] Senate Report No. 475 and House Report No. 408, 86th Congress, 1st session.
[10] Congressional Record, Tuesday, August 25, 1959, Remarks of Senator A. S. (Mike) Monroney.
[11] This is the so-called "civil eligible" requirement which can move in either military or commercially operated aircraft.

craft. There are no aircraft in the commercial carrier industry which were originally designed as cargo carriers. All commercial cargo aircraft have the serious disadvantage of high floor and side door loading. For many types of military cargo, they are useless. None have the required payload range capabilities.

The over-all cargo airlift situation is serious and unless action is taken to modernize and expand the national cargo capability, both military and commercial, effective airlift support cannot be assured the Armed Forces. Further, unless cargo capability is modernized and expanded, the Department of Defense and the nation will continue to be denied efficient and economical airlift service.

While the need for modernizing military airlift capability to support the hardcore mission is widely recognized, there is, as mentioned earlier, strong opposition to any modernization of MATS operating in its present role. There is good reason to believe that this opposition would be withdrawn if MATS channel traffic operations were reduced and added emphasis placed on the hardcore mission. Thus, it appears such a reduction would have public relations advantages as well as being militarily desirable. To achieve optimum benefits, any plan for adjusting the size or operations of MATS must assure adequate and efficient military airlift capability for hardcore requirements, and, at the same time, give impetus to expansion and modernization of commercial cargo capability. Delay in formulating and announcing Department of Defense intentions in this regard will have an adverse effect on airlift readiness capibility.

D. Commercial Augmentation Airlift: There is a military requirement for commercial augmentation airlift.[12] The amount of peacetime commercial augmentation airlift procured by MATS has been increasing. In Fiscal Year 1954 the amount was $29.1 million. It was 56.7 million in Fiscal Year 1958, 70.4 million in Fiscal Year 1959, and will be higher in Fiscal Year 1960. These amounts represent only a portion, however, of DOD expenditures for commercial airlift service. In Fiscal Year 1959, including MATS commercial augmentation, the DOD spent over-all $231.6 million for commercial airlift service.

To provide this augmentation which best serves Defense requirements and produces maximum over-all benefits, an effective arrangement between the Military Air Transport Service and the commercial carriers is required.

Except for the Civil Reserve Air Fleet Plan, there is no joint plan for the participation of commercial carriers in the movement of MATS controlled traffic. Consequently, military traffic has little significance in the equipment programs of major carriers and is not having the impact that it could have on the growth and modernization of air cargo capability. Rather, it is now, probably more than any other factor, the real genesis of the present MATS controversy and, unless there are changes in present concepts, the basis for its continuance.

Critics of MATS claim that (1) too little military traffic under the control of MATS moves via commercial carriers, and (2) continuance of present procurement methods will lead to destructive rate practices. Instead of being used to perform certain specified airlift requirements, such as normal personnel movements or routine logistical support on a regular basis, commercial carriers are employed by MATS in peace-time to some degree to meet airlift requirements which are beyond the programmed military capability or which might result in uneconomic use of such military capability.

Normal procurement policies and practices do not accomplish the results intended by the guidelines laid down by the Secretary of Defense for the augmentation of military airlift capability. In procuring commercial augmentation airlift, MATS uses advertised competitive bidding for the bulk of the traffic. Common carriage is used only when it results in an immediate price advantage to the Air Force or when it is the only commercial means of movement available. Advertised bidding has, however, produced low cost air transportation.

Distribution of traffic to commercial carriers is based primarily on cost factors. No preference is given because of a carrier's commitment to the Civil Reserve Air Fleet, because of his status or the route system he maintains, or because of the type of equipment operated. Ownership of aircraft, also, is not a prerequisite to participation in MATS traffic.

As the consequence of these policies in procuring augmentation airlift, rates bid by carriers have declined to what the Civil Aeronautics Board terms "dangerously low." There is concern in many quarters that a continuation of the present policies and practices will have disastrous economic effects insofar as the air line industry is concerned. This contention has been questioned, however, in view of the continued satisfactory service provided by most operators.

Present purchasing practices provide little incentive for carriers to modernize or acquire additional cargo aircraft equipment based solely on military business. Despite this, however, a few carriers have recently ordered modern cargo equipment.

Qualitative and quantitative deficiencies in commercial cargo capability, plus the opposition to modernization of military air cargo capability, have serious defense implications. Our total cargo airlift capability may decline dangerously at a time when we need more capability and more aircraft with greater range. In short, the Department of Defense is buying only "term insurance" airlift when "life insurance" airlift is what is needed to meet immediate service requirements and provide the type of airlift capability desired for the future.

Two reasons have been suggested as to why the Air Force continues its present airlift procurement practices. One possible reason is suggested by the Committee on Government Operations, House of Representatives, in House Report No. 1112, **Military Air Transportation** (page 23), when it stated as follows: "The possibility cannot be ignored that MATS encourages such operations, not only to secure bargain rates for the government, but to prevent the civil air industry from effectively challenging its place in the sun." The other reason given is the difficulty in distributing business if other than advertised competitive bidding were used, and the requirement of law that advertised bidding must be used wherever possible. The second reason is substantial and may require legislation to change.

While there are indications that commercial carriers are willing and able to undertake some modernization of their cargo fleets based solely on the commercial market, there is a belief widely held within the government that a diversion of sizeable quantities of government traffic would greatly accelerate this modernization and expansion. There are important reasons, however, against effecting further traffic diversion from MATS until after commercial air carriers actually acquire modern cargo aircraft. Procurement of augmentation airlift on a basis which will encourage and assist the modernization and expansion of civil cargo airlift seems possible although it may require legislation.

Because the Department of Defense is interested in developing a commercial airlift fleet well suited to defense needs, a major portion of routine logistic airlift should con-

[12] Statement of Honorable Perkins McGuire, ASD(S&L), before the Holfield Subcommittee on Government Operations.

inue to be assigned in increasing degree to commercial arriers, subject to reasonable prices, availability in emerencies, and the assurance of modernization. The assurance f this government traffic, on a long-term predictable basis, vould assist commercial air carriers in planning, financing, nd implementing programs for new aircraft of the type equired for Department of Defense service. In this regard, he Civil Aeronautics Board has gone on record in stating hat with the aid of Department of Defense traffic awarded o the carriers at fair and reasonable rates (underscoring dded), the United States could expect a healthy commerial air transportation industry adequately equipped and fully willing to meet the requirements of the Defense Department in case of emergency.[13]

E. Growth of MATS: Increases in traffice movements nd greater ability to produce airlift are good indicators of he growth of MATS. Tons of cargo transported by MATS during the period 1954-1959 grew from about 85 thousand tons to 185 thousand tons. Passengers during the same period increased from 489,000 to over a million. The military airlift capability maintained within MATS in the period 1954 to 1958 increased by a factor of almost two—from 580 million ton miles to over one billion ton miles annually.

The cost of providing airlift service increased from slightly under $200 million in 1954 to about $360 million in 1958, the last year MATS operated on a non-industrial fund basis.

The growth in MATS ton-mile potential, despite a decrease in the number of assigned aircraft, has resulted from up-grading the MATS fleet. As an example of the effect of this modernization, the Commander of the Military Air Transport Service stated to the Air Force Association in Miami on September 5, 1959, that he had been able to retire five C-54s for each C-133 placed in service.

In order to keep from a situation where available military airlift far exceed the peacetime requirement, the Air Force has limited MATS ton-mile capacity to the April, 1959 level and reduced the flying hour objective from 6 to 5 hours per day per type of aircraft. This means that as more productive modern aircraft are brought into MATS, old aircraft will have to be retired and/or the utilization rate for all aircraft reduced. No increase in the MATS capability can be effected under present policies unless fully justified by military considerations. In fact only recently a decision has been made to further reduce the number of aircraft in the MATS inventory by phasing out three squadrons of C-97 type aircraft during fiscal year 960.

While increasing military requirement have been a ignificant factor in the growth of MATS, the inability f commercial carriers to provide adequate air cargo capaility in wartime has also been an important consideration. Even today, commercial carriers are unable to provide the vartime cargo capability to handle the traffic which does ot require military airlift. Until there is an expansion in ommercial air cargo capability up to the required level, is appropriate that MATS be capable of making up any eficiency that may exist.

Civil Reserve Air Fleet (CRAF)

A. Plan: The Civil Reserve Air Fleet Plan was formally dopted shortly after the outbreak of the Korean War. It vas intended as a means of augmenting the airlift capabily of the military forces in time of war on an effective and conomical basis. The principle of augmenting military apability possessed by commercial carriers is sound and its nplementation on a realistic basis is in the national interest. However, present CRAF planning is largely a reflection of World War II experience and, consequently, inadequate to cope with the wide variety of emergencies that might arise.

CRAF planning, while originally calling for activation of the fleet only in general war situations, now envisages call-up of the fleet in situations short of general war. However, there is not general agreement between the air lines and the Government concerning the use of CRAF in other than general war and, except for contractual arrangements, no means now of assuring response of CRAF in limited emergencies. Without major policy changes as to the use and procurement of commercial augmentation airlift, there is doubt that a workable and acceptable program for a limited war CRAF can be formulated.

Carriers are reportedly reluctant to agree to a plan for activiating CRAF in situations short of general war because of possible adverse effects on their competitive position within the industry. They can see no reason why they should voluntarily abandon their commercial markets for a military support role simply on the request of the Department of Defense when their services are not employed by the military in peacetime on a basis more consistent with their emergency role.

B. Aircraft: The passenger aircraft in the Civil Reserve Air Fleet are the most modern available anywhere. They are adequate both qualitatively and quantitatively for the military passenger airlift requirements. However, commercial cargo capacity is inadequate to accommodate those military requirements which could otherwise move in commercial aircraft. Present commercial cargo aircraft are severely limited in range and payload. Also at present, there are no aircraft in the commercial inventory which were designed specifically for cargo service. Of the cargo aircraft assigned to the CRAF, a high percentage are C-54s and would be worthless in the MATS role if island bases were denied. Thus, the availability of new long-range cargo aircraft is a matter of great importance.

C. Responsiveness: There is no express legislative basis for the CRAF or for the activation of the fleet as required. The entire program is therefore largely a cooperative matter between the air line industry and the Air Force, dependent upon contractual arrangements between the parties involved.

Despite the length of time the CRAF program has been in effect, the dependence of the Department of Defense on CRAF and the several millions of dollars of government funds that have been spent on the program, there are only two carriers who have signed standby contracts with the Air Force. However, the basic groundwork has been done and more rapid progress is now assured. In addition to this fact, a sizeable number of the cargo aircraft currently in CRAF are not modified and equipped so that they can perform their wartime mission.

The lack of contracts and the status of the cargo fleet give rise to serious doubts insofar as CRAF responsiveness is concerned. Further, there is no feasible and economic means of testing the responsiveness at this time. Thus, in the very early and critical stages of a general war, it appears unwise for the Armed Forces to count on any commercial air support beyond that already handling military traffic when the war began. Recognizing this, and remembering that the CRAF Plan does not provide for activation of the fleet in situations short of general war, it seems fair to say that at present CRAF is not a readily available resource. in all situations.

[13] Hearings before a Subcommittee of the Committee on Government Operations, House of Representatives, 86th Congress 1st Session, *Military Air Transportation*, page 119.

D. Alternative: If commercial carriers were used in peacetime in approximately the same percentage ratio that would be required in wartime, as suggested by the Air Staff,[14] there would be a substantial "built in" reserve cargo airfleet available to the military in any type of emergency. This would greatly reduce the dependence on CRAF as now constituted and increase the flexibility of military airlift forces. It would permit the development of a realistic plan for the employment of that commercial capability not otherwise committed to military support in either military or civil defense support if required.

Also, it would permit the channeling of funds now spent on CRAF into other essential areas and reduce the requirement on the Air Force for the maintenance of en route supplies and support.

Military And Commercial Airlift
A Solution to Present Controversy

It is generally agreed that both military and commercial airlift are essential to national defense, and there should, therefore, be an effective understanding between the two. There are sharp differences between supporters of MATS present operations and the commercial carrier industry. Because of these differences, needed modernization and expansion of national air cargo capability is not being effected to the extent considered necessary. As previously mentioned, the modernization of military airlift is being blocked. It is definitely in the national interest that this impasse be overcome.

Policies should be established which clearly outline the role of MATS, as well as that of commercial carriers, in providing airlift service to support the Armed Forces under all conditions.

These should have as their objective the:

(1) Equipment and operation of MATS in peacetime to insure its capability to meet military hardcore requirements in a general war and in situations short of general war, and such other military requirements as cannot be met with certainty by commercial carriers.

(2) Reduction of MATS routine channel traffic operations, on an orderly basis consistent with assured commercial airlift capability and economic peacetime use of any MATS capacity resulting from necessary training or other operations related to its hardcore requirement.

(3) Increased use of commercial carriers for routine logistic supply and personnel movements as determined by item (2).

(4) Modernization of MATS cargo airlift capability to effectively support the hardcore airlift mission.

(5) Participation in and support of the DOD of governmental programs for the development of long-range, economical turbine-powered cargo aircraft for military and civil application.

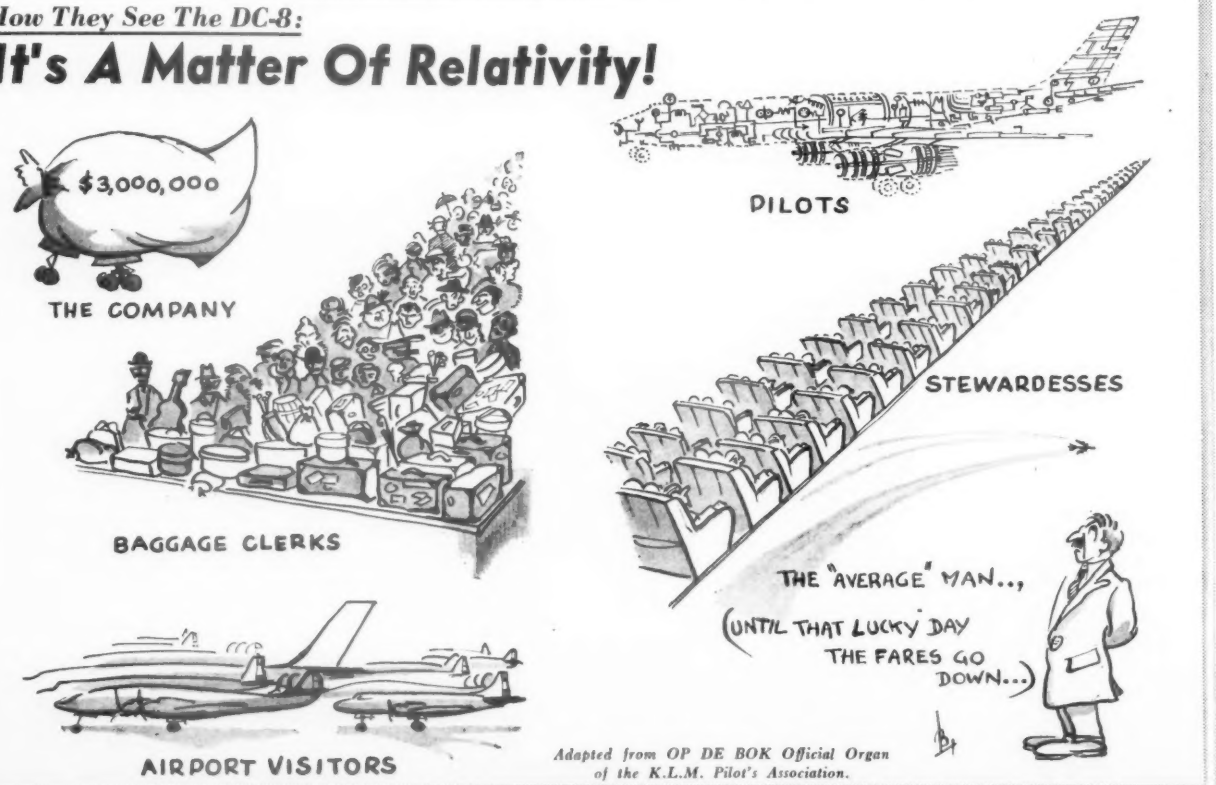
(6) Support by the DOD of legislation, if proposed, for the guarantee of loans for the purchase of modern, newly-developed cargo aircraft by commercial carriers.

(7) Better adaption of commercial augmentation airlift procurement policies and practices to the long-range DOD requirement for effective overseas commercial airlift service so as to encourage and assist in sound economic growth, development, and maintenance of an increased commercial air cargo capability.

[14] Memo for the Secretary of the Air Force from Vice Chief of Staff, USAF, Subject: "Airlift," dated April 2, 1959.

How They See The DC-8:

It's A Matter Of Relativity!



Adapted from OP DE BOK Official Organ of the K.L.M. Pilot's Association.

AAL Captain Gets 1959 Daedalian Safety Award

CAPTAIN Daniel L. Boone, a 57-year-old American Airlines pilot has been awarded the Order of Daedalians Flight Safety Trophy as the outstanding air line pilot of the year 1959.

Major General Warren F. Carter, USAF (Ret.) and national commander of the Daedalians, presented Captain Boone with the trophy and a plaque for his skill in landing a seriously disabled DC-7 on an unlighted emergency field.

Captain Boone's citation lauded the outstanding performance of duty saying: "The technical proficiency displayed by Captain Boone in meeting the grave emergency, and in the handling and landing of the seriously disabled aircraft, reflects the highest credit upon him, his organization, and the traditions of his profession."

"While on a non-stop flight from Washington, D. C., to Los Angeles April 17, 1959, a propeller on the No. 2 engine ran away. It could not be feathered and continued to rotate at maximum speed.

"Approximately three minutes later, No. 1 engine gave evidence of failure and the propeller was feathered. A hole was observed in the cowling of No. 1 engine, indicating a part had been thrown from No. 2 engine.

"An approach was made to an unlighted emergency landing field at Akron, Colorado. Because of the lateness of the hour, it was difficult to locate the landing field.

"On the initial approach, the airplane was not lined up properly because of the bad visibility at dusk. It, therefore, became necessary to circle the field with minimum speed at a very low altitude. Under great difficulties a safe landing was executed with no injuries to passengers or crew.

"In recognition of his superior performance of duty, the Order of Daedalians awards to Captain Boone the Daedalian Flight Safety Award for 1959."

It was the third consecutive award made to an air line pilot. The first recipient was Captain Richard N. Ogg (PAA), 46, for his successful ditching of an airliner in the Pacific Ocean. The second award was given to Captain Gregory P. Thomas (FTL), 46, for his successful landing of a DC-6A on a sandbar in Jamaica Bay after his engines failed on take-off. ALPA's First Vice-President S. W. Hopkins, 51 (DAL), received the 1958 award for his successful landing of a DC-7 with two engines damaged and inoperative at Friendship Airport without injury to his crew or passengers.

Daedalian trophy winners, General Thomas S. Power (left), Commander-In-Chief of the Strategic Air Command and Captain Daniel L. Boone (right), American Airlines pilot, receive the congratulations of Major General Benjamin D. Foulois, called the "Father of Military Aviation" at the 26th Annual Convention of the Order of Daedalians.

The trophy is a rotating award which is presented each year to the commercial air line pilot or copilot selected by the Air Line Pilots Association for outstanding performance in aviation safety. The plaque is a permanent award. The Order of Daedalians is a group of World War I pilots and their descendents which was formed in 1934 for the purpose of promoting flying safety.

The military trophy for flying safety in 1959 was awarded to the Strategic Air Command. General Thomas S. Power, commander-in-chief of SAC, received the trophy in behalf of all SAC personnel.

Also honored by the Daedalians were Major General Benjamin D. Foulois, USAF retired, upon the occasion of the 50th anniversary of his flight in "Aeroplane No. 1" from Fort Sam Houston, Texas, in 1919. At this time, the then young lieutenant and "Aeroplane No. 1" represented the entire aviation strength of the country.

For many years the Order has made flight safety its major activity. Initially, military flight safety was of major concern, then in 1957, an award was established for civilian pilots.

The Order is named after the Greek hero of fable, Daedalus, who fitted wings for his son, Icarus, the first man to fly according to legend.

Pilot Logs 30 Yrs. On PNG

Captain T. F. Jardine, who has been flying South American air routes longer than any other U. S. commercial airline pilot, recently completed his thirtieth year with Panagra.

The 57-year-old veteran, now taking jet training in preparation for the airline's inauguration of DC-8 service to South America, has flown more than 26,000 hours in the last three decades.

Captain Jardine was one of the first men to prove that the airplane could be used for heavy freight operations in South America when, in 1933, he landed a single-engine Fairchild monoplane with a load of mining machinery at a camp site 12,000 feet high in the Peruvian Andes. A year later, he ferried the first DC-2 from Cristobal, in the Canal Zone, to Lima, Peru, to become the first to fly the 1,500-mile distance in a single day.

Capital's Senior Pilot Called "One Of A Breed"

Edward (Red) Couples is now senior pilot at Capital Airlines. They call him "one of a breed—" and rightly so.

Couples is a charter member of the "daredevil" flyers who molded the shaky aircraft concept into the giant billion-mile entity of today. A handful of men whose courage and skill served as the backbone of the air lines in the late 20's and early 30's when the industry was struggling to get off the ground. Piloting the big airliners of today with competence and assurance, these veterans hold a unique spot in the history of air transport.

In the early 1900's, Couples was busy with chores on a farm in Arkansas. In his mid-twenties, he decided to save his money to buy an airplane. His first year of flying almost discouraged the grity redhead. His plane was raked by a hailstorm and later threw a rod. When winter came he swore off flying.

By spring he was back in the cockpit—almost. He had joined an aerial circus as a "routine wingwalker." His 'routine' chores included parachute jumping, doing handstands and performing trapeze acts with a cruising airplane as his stage.

The circus closed in 1925. Couples then hired on as an aircraft salesman. His main job was flying ariplanes to buyers from Ohio to Texas.

"I had one of my most chilling ex-

Captain Red Couples

periences on that job," said Couples. "Another pilot and I were forced to make a landing at Dallas during a raging storm. We had to land because the plane's gas tank had sprung a leak and I had to plug up the hole with my finger which nearly froze by the time we landed."

In the next decade, Couples worked as a barnstormer, an air line pilot, and finally as a mail pilot. Searching for that elusive commodity of security, he landed a job as a mail pilot with Clifford Ball Airlines which eventually grew to become Capital. Couples has been with Capital ever since.

During his 30 years with the Company, he has flown nearly every type of aircraft from the old Waco and Standard to the prop-jet Viscount. Including his Viscount time, Couples' logbook shows almost five million miles and 26,000 hours of commercial flying experience.

"Red" Couples has changed a lot since his barnstorming days. A man who once thrived on personal risks, he now works fastidiously to eliminate the slightest chance of danger from his flights. His byword now is safety and his greatest source of enjoyment stems from the moments he spends with his wife Louise and teen-age daughter, Sandra, in their comfortable Virginia home.

Red Couples has earned a reputation in the aircraft industry. And his fellow pilots pay him just tribute when they cite him as . . . "one of a breed, a pilot's pilot."

"Pilot Eye" Helps Police Trip Up Crooks

The headline read, "Pilot turns into 'Amateur' Sluth, helps trap crook."

The report went on to say:

Nonplussed police of five Washington area jurisdictions have credited an Alexandria "amateur" with casually arranging the involuntary surrender of a suave suspected swindler—something they had been trying to achieve professionally for many fruitless months.

The Alexandria "amateur" who put an end to it all was identified as Paul E. Prince, a Capital Airlines pilot.

As a result of his action, 31-year-old former convict Thomas F. McEntee is now in jail at Upper Marlboro.

Police agreed that McEntee had been giving them figurative fits since his profitable debut in the Washington area in June of 1959—only a month out of Lewisburg (Pa.) Penitentiary where he had served his last term for similar shenanigans.

In the ensuing weeks, he posed successfully as the highly-placed aid to VIPs, police said. But they said the expensive brief case he carried was crammed with pawn tickets representing the goods he purchased with worthless checks.

Mrs. Prince said McEntee showed up at her house in a taxi as "the second assistant to the Secretary of Defense." There was no quibble about the $100 price the Princes' had put on her husband's hunting rifle in a newspaper classified ad, Mrs. Prince recalled.

McEntee made out a Florida bank check and rode off with the rifle, police said, to an Alexandria gunshop which had been trying for weeks to buy Prince's rifle for $50—and finally did.

Prince found the check worthless and began watching for gun ads similar to the one which drew McEntee to his house. His first call struck pay dirt. Mrs. George Obear, of 18 Cheverly Circle, Cheverly, had had a McEntee phone call in response to her advertised sale of a German hunting rifle for $175, and arranged an appointment.

Prince alerted a Fairfax County detective who alerted Detective Lennie Daniels of Washington's Check and Fraud Squad, who alerted Prince Georges police. McEntee was arrested at the Obear home.

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Pilots Study World Aviation Problems at IFALPA Conference

The Fifteenth Annual Conference of the International Federation of Air Line Pilots was held in Istanbul, Turkey, March 22-29. Representatives of 42 pilots' organizations from all points of the world attended and took 217 actions on 40 agenda items pertaining to air safety, and aviation operational, social and industrial problems.

Main item of concern was the worldwide failure of operational facilities to keep up with the rapid technical development of jet-age aircraft.

Pilot representatives pledged complete cooperation and support to individual state authorities and international agencies working to improve operational facilities. Minimum standards and regional plans were established by ICAO as long as ten years ago, but the main cause of the problem is still the overall reticence to implement previously established standards.

Conference representatives also gave strong censure to air traffic control procedures and facilities at Rio de Janeiro, Brazil. There have been two mid-air collisions at that South American port city recently.

The delegates instituted procedures to increase cooperation between pilots and the Brazilian government through which Air Traffic Control procedures and facilities in the Rio area can be brought into accord with standards of the ICAO as well as recommendations of IATA and IFALPA. A protest to the Peruvian government protesting their failure to comply with commitments to the ICAO to establish flight time and rest time limitations for pilots was transmitted by the delegates. The Federation has learned of instances where Peruvian pilots fly as many as 185 hours per month.

The delegates discussed plans to request ICAO airworthiness division to review immediately certification requirements for jet aircraft, particularly with reference to landing distance and controllability, which in their present status, endeavor to get too much airplane into too little airport.

Other agenda items reviewed and acted upon included: aircraft anti-collision lighting, the marginally safe flight characteristics in some new aircraft, instrumentation for monitoring take-off safety, communications, meteorology, navigation aids, and altimetry.

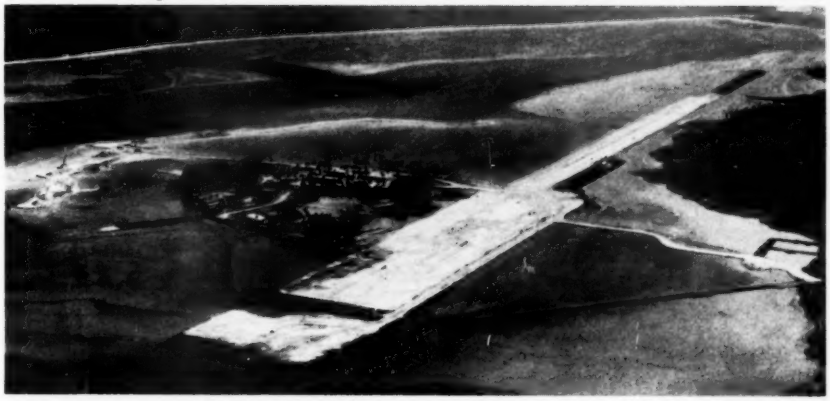
C. N. Sayen was re-elected President for the 8th consecutive time. Others elected: Deputy President, Captain E. A. Jackson, of Ireland; Secretary, Captain A. J. Spooner, of Great Britain; and Treasurer, Captain N. P. Barron, of the Netherlands.

Pioneer Aviator Dies

Dr. William Whitney Christmas, 94, credited with being the next man to fly an airplane after the Wright Brothers' initial success, died April 14 in a New York hospital.

On March 8, 1908, he flew a powered, heavier-than-air machine, the third man to do so. Dr. Christmas, an aeronautical engineer, is also credited with the invention of the aileron.

Tahiti Airport to be One of World's Most Unusual



In October of 1960, one of the world's most unique airports will be open for conventional air line service.

Located at Papeete, capital of Tahiti, the airport is constructed of rock deposted on sub-surface coral. The thousands of tons of rock required for the airstrip are transported over an eight-mile distance by 50 trucks running in constant relays, 24 hours a day. The airport is situated on a lagoon, amidst a setting of palm trees and white sand. By April, 1961, the final completion date, the airstrip will measure 11,900 feet and will be capable of receiving any jet transport presently in service.

CAB Figures Show Jets Worth 24 'Gooney Birds'

A transport turbo-jet (example, the DC-8 or 707) is capable of performing the work load of three piston-engine planes or 24 of the old work-horse DC-3's, according to a research report issued by the CAB.

According to the report, the domestic versions of the big turbo-jets normally carry between 112 and 125 passengers, but can carry up to 180 passengers in all-economy seating configurations. The intercontinental versions of the jets normally carry between 130 and 140 passengers, but can carry up to 190 passengers.

Although the new jet aircraft are primarily passenger planes, they also have a distinct advantage over their piston predecessors in their larger cargo-carrying capacity. Each jet can carry about 16,000 pounds of freight in its cargo holds, or about 2½ times the normal lift capacity of the largest piston aircraft.

The report contained compilation of comparative information covering the major long-range and intermediate-range turbo-jets, turbo-prop aircraft and various types of piston-engine aircraft.

Copies of the report including comparative data on speed, payload capacity, productivity, seating configurations, aircraft size and weight and cargo-hauling capabilities are available from the Publications section of the CAB in Washington.

Bomb Hoaxes To Be Met With Get-Tough Policy

The increasing incidence of bomb hoaxes is being met with a militant "get tough" policy while at the same time steps are being taken to determine what can be done about actual sabotage.

Because bomb-scares are punishable by Federal Law, the FBI, according to reports, has taken two steps to crack-down on this perverse humor.

▶ Orders have gone out that all FBI news releases about bomb scares on planes will be released personally by FBI Director J. Edgar Hoover.

▶ All U. S. attorneys who attended a recent conference in Washington, it has been revealed, were instructed to press bomb scare charges against the perpetrators so that stiffer fines and possible jail terms will be handed down by federal judges hearing the cases.

Although up until now, persons who have joked about bombs being in their luggage have gotten off comparatively easy, they will no longer be looked upon as harmless. In addition to action against them within the scope of the present law, there is now a concrete movement in the industry to stiffen the law, which provides a maximum penalty of a year in prison and a $1,000 fine, by changing it from a misdemeanor to one providing felony penalties.

How to avoid actual sabotage, however, remains a perplexing problem with a variety of suggested solutions ranging from fluoroscoping all baggage to methods of eliminating the insurance profit motive.

Both the Air Line Pilots Association and the Air Transport Association continue to work on the problem.

▶ As one approach, the ATA has retained the Stanford Research Institute to conduct a thorough examination of the problem through which it is hoped sufficient knowledge might be acquired to develop protective measures.

▶ On a somewhat broader scale, ALPA has renewed and accelerated its efforts not only to cope with the sabotage problem, but to obtain improvements in all-cargo safety. The services and results of the studies of the Association's Cargo Safety Committee have been offered to the Stanford group employed by the ATA.

While there has been a tendency to view the problem of aircraft sabotage within a narrow framework, the Association has looked upon it as part of the broader problem of dangerous cargo generally.

Prop-Jet Convair Certified

The Federal Aviation Agency has certified the new Allison prop-jet Convair for use in commercial service.

FAA approval climaxed a 15-month evaluation program which included 345 hours of flight and certification testing. Conversion of the Convairs involves removal of the original piston engines and installation of Allison prop-jet engines and Aeroproducts turbo-propellers. The new aircraft will cruise at 350 mph, climb at approximately 4,000 feet per second, and take-off from a 4,180-foot runway.

ALPA representatives recently visited the Convair testing grounds to perform in-flight evaluation checks on the new converted Convair.

Airport Inadequacies Lashed

An Air Safety Representative for the Air Line Dispatchers Association lashed the inadequacy of present airports and rescue facilities in an aricle in the March *Air Line Dispatcher*.

John J. Blake, ALDA's Western Region Air Safety Representative called for certification of airports according to federal standards. He stated:

"Almost every facility and airman in aviation operations has to be certificated, but not airports."

In essence, Blake called for fields to be classified by FAA as to size, ability to service aircraft, approach aids, markings, runway, taxiway and ramp strength, lighting, maintenance, fire-fighting, crash equipment and airport operation personnel. If fields failed to comply, they should be closed. In addition, if air lines were allowed to use only those fields of the type or class fitted to their equipment and operation, they would have a tool to force airport operators to comply.

Many airports, according to Blake, are operating at an increased profit without offering any corresponding improvement in facilities.

On the subject of ditching, Blake cited a hypothetical crash after take-off at L. A. into Santa Monica Bay.

"There are absolutely no crash boats or any organization to proceed to the crash scene. If there were 120 people five miles offshore who survived the ditching, they would drown because there is no individual a dispatcher could turn to for immediate assistance."

In conclusion, he added that most of the large airports in the USA are probably in the same fix if they are located near any large body of water.

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FAA-CAB Clash Over Crash-Probe Authority

Strong differences between the FAA and the CAB over safety rule-making and accident investigation authority are coming to a head.

E. R. Quesada, FAA Administrator, in a statement before the House Appropriations Sub-committee recently said he "personally" felt that accident investigation should be in the hands of his FAA and that the Board should concentrate on economic matters, leaving safety promotion to FAA. James Durfee, CAB Board Chairman, in a statement before the same committee reiterated his "opposition" to the transfer on safety-rule-making from the Board of the FAA.

Quesada, admits that his proposal is open to the charge that if FAA should take over the investigation of air crashes, it might be in the uncomfortable position of being judge, jury and defendant simultaneously. As a solution, Quesada has theorized that a type of semi-independent accident investigation branch could be established within FAA staffed by experts who would have little connection with the Agency.

Some aviation interests, however, have questioned Quesada's argument that the Board gets so involved in crash investigations it doesn't have adequate time for its main job, the economic regulation of the industry they point out that most accident investigations are performed by CAB's bureau of safety personnel, not the Board Members.

Privately, according to newspaper reports, the majority of CAB officials believe accident investigations must be conducted by independent, impartial men who have no connection with any interest group that plausibly might be involved in the causes of airliner accidents.

The basis for the fued between FAA and CAB as seen by the industry is the expanding role FAA has been taking in crash probes, overlapping in some instances what had previously been considered the exclusive functions of the Board. FAA officials currently are being quoted as widely as CAB officials at aircraft disaster scenes.

Sayen Chosen For AAA Post

C. N. Sayen, President of the Air Line Pilots Association, has been named to serve on the Board of Directors for the American Arbitrators Association.

Thirteen new members were appointed to the Board of Directors at the AAA's Annual meeting on March 9. The new members were chosen from such fields as commerce, publishing, teaching, law firms and unions.

The AAA is organized for the purpose of arbitration of commercial disputes between businessmen as well as labor arbitration.

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Industry Briefs

Panagra Receives First DC-8's

Panagra received the first of four intercontinental DC-8 jetliners from Douglas in April. They will be placed in scheduled service on the Company's El Interamericano service between the U. S. and South America during the early part of May.

UAL Sets Freight Record

A single-day freight record was set by United Air Lines on April 13, when the air line flew 357,200 freight-ton miles. Volume was 11 per cent higher than the previous mark of 321,549 freight-ton-miles established September 10, 1958.

Red Cross Honors NOR

North Central Airlines was honored last month by the American National Red Cross for being the only U. S. scheduled air line to require its stewardesses to complete the Red Cross' standard first aid course. NOR received the award for maintaining its five-year record of 100 per cent first aid qualification in its stewardess corps and of requiring each stewardess to complete the refresher course yearly.

PAA Cargo Volumn up 50.3%

Pan American World Airways' transatlantic cargo volume on scheduled services has increased 50.3 per cent during the first quarter of 1960 over the corresponding period of a year ago. Eastbound volume was up 37.3 per cent while westbound increased 66.5 per cent.

NAL Jets to South America

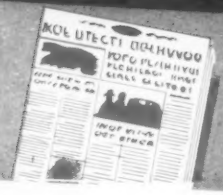
Douglas DC-8B jets were added to the National Airlines—Pan American—Panagra interchange between the U. S. and South America during May. The jets will be in addition to regular piston flights operating on the "El Interamericano" route.

NEA Carries 1 Million in 1959

Northeast Airlines carried 1,237,282 passengers in 1959, to go over the million mark for the first time in their history. Total revenue passenger-miles flown totaled 519,827,847, a 27.7 per cent increase over the 1958 total.

As Others See It

Excerpts from Comments in The News of Interest to Pilots



The recent FAA ruling forcing air line pilots to retire at age 60 has received considerable coverage by the Nation's Press, radio and television. Following are a few of the many clippings dealing with compulsory retirement which have crossed our editorial desk.

Age Isn't What Counts

THE AIR LINE Pilots Association, an AFL-CIO union, has less than a month to head off a plan for compulsory retirement of air line pilots at the age of 60, and is fighting hard to do it. In a new series of statements issued this week, the pilot's group declared that the idea has no precedent, no medical evidence for its need, and no legal authority to back it up.

The plan was announced three months ago by Elwood R. Quesada, administrator of the federal aviation authority. Under it, all air line pilots would be retired at the age of 60 and would be barred from flying jet planes at age of 55.

A decision was scheduled for Oct. 1, but the proposal kicked up such a storm that it was postponed for 30 days.

★

IN OUR VIEW, the plan shares all the faults of all such compulsory retirement ideas; it substitutes a rigid, arbitrary rule for knowledge and judgment.

As the union president, Clarence N. Sayen, pointed out, there is no evidence that a pilot's age affects his performance. Of the 27 air line accidents since 1946 which were attributed to the commanding pilot, the oldest pilot involved was 50. One was in his twenties, 16 were in their thirties, and nine in their forties.

This may prove only that most air line pilots are in their thirties, but it is a strong indication that pilots 50 and older are at least as capable as their juniors and quite possibly more so.

★

CERTAINLY no pilot should be permitted to fly passengers without passing rigorous physical tests, including eyesight, hearing, speed of reflexes, and so on. But such tests are all that is needed.

As we pointed out in this column yesterday, the policy of retiring capable men at an arbitrary age just because the book says so is unjust and shortsighted. It hurts the men and short-changes their employer of years of valuable, experienced service.

One of the smartest flyers we ever knew used to say he didn't want to be the most brilliant pilot, just the oldest.

Age Versus Proficiency

From Aviation News

THE FEDERAL Aviation Agency has announced that air line pilots will have to retire on reaching the age of 60. When the age limit goes into effect next March 15, pilots will be automatically out of a job on their 60th birthday, regardless of ability, experience, or physical condition. Nearly 300 pilots will be affected over the next eight years.

The Air Line Pilots Association has strenuously fought this ruling, and is planning to fight it in court. We think the union's protests are justified. The main results of fixing an arbitrary age limit are waste of seasoned skill, and injustice against those forced out before they are ready to retire.

A PILOT does not become suddenly incapable of handling a job at the age of 60. Only a minor fraction of total air accidents over the last 10 years has involved pilots over 50—fewer than can be accounted for by the greater number of younger pilots.

The FAA cited the danger of incapacitation due to heart attacks and strokes, which it said grew "significantly more frequent" in any grouping reaching 60.

THE pilots' union, however, contradicted this finding with statistics indicating that, by the year 1967, 11 cardiac deaths could be expected among pilots of 45 to 49, compared with 3 in the over 60 group.

In addition, it said, all instances of heart attacks suffered during flight involved pilots under 50, and there is no way to predict a heart attack at any age. Union President Clarence N. Sayen said, "All the FAA has done is to deprive competent, healthy pilots of their personal right to practice their profession."

We do not believe that any age limit is required, but if the FAA insists on a limit it should at least adopt a more realistic one.

Age and Fitness

West Central Tribune, Wilmar, Minn.

The Air Line Pilots' Association has been denied an injunction which sought to restrain a Federal Aviation Agency case against fliers 60 years old. Pilots have claimed the order is arbitrary and unreasonable.

As interpreted by the pilots, the Federal Aviation Agency's dictum closes the careers of all pilots at the three-score mark, without regard to or consideration of experience, excellence of physical condition, or the confidence and trust of their employers.

Nature has never set an age barrier, a positive time when coordination and judgment are suspended. One individual may weaken at 50, while another may go on unimpaired for another ten years or more.

Reason would dictate a careful and frequent check of elder pilots' ability and dexterity. Any in whom a slackening of skill or reaction is detected should be grounded when deterioration is discernible.

An Injustice Against Pilots

From the Chicago American

The Air Line Pilots Association has filed an action in the United States District Court in New York to test the legality of the Federal Aviation Agency rule that air line pilots must retire at the age of 60. The rule goes into effect on March 15.

The pilots claim that proficiency and health are the only standards that ought to be applied to an air line pilot. They point out that a pilot of 60 must meet the same standards applied to a man who is 30.

It seems to us that a man does not change radically by the mere attainment of age 60, and it is wrong to think of people in age groups.

We shrink from categorizing people in other respects, such as occupation, race, religious belief and so on. Why should we think of healthy, competent men as 60-year-olds, or 50-year-olds?

Of course, piloting an aircraft in this jet age is a specialized, highly-skilled task, and the requirements should be strict, and rigidly enforced. In this respect the FAA rightly considers itself the advocate of the public welfare.

But there appears to be no evidence that a man is rendered incapable of doing his job by the passing of a certain number of years. Perhaps pilot standards should be even higher than they are, but these standards should be applied on an individual basis, whether the man is 40, 50, or 60.

Man's years of usefulness have increased steadily, and now his productivity stretches into his sixties and seventies. It seems wrong to discard a whole class of men strictly because of their age.

FLYERS' FORUM

Personal Opinion From Letters To The Editor

Pilot's Son Writes of Dad's Pride In Company-ALPA Cooperation

My father, Captain John (Jack) A. Berke, was killed near Arlington, Washington State while on a supposedly routine training flight conducted by the Boeing Airplane Company of Seattle, Washington. This aircraft was Boeing 707-227, U. S. registry N-7071. I feel certain that you are fully aware of this accident and the rather slanted "news coverage" stemming therefrom.

I would like to take this opportunity to thank the Air Line Pilots Association for their coverage of this accident and the members of the investigation board for their kindness and co-operation to myself and my mother, especially Captain Glenn K. Bruno, Braniff International Airways.

In reference to your letter of January 14, 1960, to my mother, Mrs. Ellaine T. Berke, I want to thank you for her. The offer of the ALPA publication was both thoughful and worthy of your organization. My mother passed away Christmas Eve of 1959 after a long and painful illness. Therefore, I felt it my duty to inform you of this.

My father told me many times that he had a great deal to be thankful for, both from Braniff and from the ALPA. He expressed his views on his experiences with both in saying that "it is too bad that there cannot be more relationships between unions and their companies like the one I have seen here (Braniff). It seems that too many people forget that there are two sides to everything and really, both can help each other." He told me many times that "it is nothing but foolishness to think that unions and companies are basic enemies, when you really boil it down, they are both after the same thing, that is making things better for all concerned, it seems stupid to me to think that you can't be a good union member and at the same time be a loyal employee, after all you gain from both when they are handled correctly."

These are just a few of comments among many, but one thought I would like to convey to you, which my father has conveyed to me, is that he was extremely proud to work for Braniff and he also felt that the many hours that he spent working for the ALPA were to his credit. In short, *he was proud of both and felt no conflict in either.*

As for myself, I want to thank you, your staff, and the entire Association for your kindness and your consideration to myself, my mother and the other members of my family. Through this, you have been a credit to yourselves and to the pilots that you represent.

Sincerely,

/s/ John A. Berke, Jr.

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Noise Abatement:

(Continued from Page 9, Col. 1)

ing point by such methods as adding extra insulation to roofs and walls, and by air-conditioning so that windows which admit noise need never be opened; and, third, by putting as much distance as posible between the source of the noise and the listener.

Efforts to minimize the impact of aircraft noise include:

- Diversion of training flights, except those required by the Civil Air Regulations for pilot familiarization, to outlying airports away from the areas with noise problems. This measure reduces the number of operations in the affected areas by many thousands each year.
- The use of million-dollar flight simulators which can reproduce almost every aspect of real flight eliminates the need for additional thousands of crew-training operations out of our major airports each year.
- Altitude restrictions have been instituted to keep landing aircraft as high as possible until it is absolutely necessary to begin the final descent for landing.
- Operating procedures and pilot techniques are being developed to assure that aircraft taking off climb to altitude as fast as possible.
- The use of preferential runways which route both landing and departing aircraft over the least congested areas is another method which can be followed whenever safe operations permit.

Noise Suppressors

While the jets were still in the design stage, the air lines, the manufacturers of airplanes and engines, and the Government, instituted an intensive research program to find an effective jet engine noise suppressor. Millions of dollars have been spent on this program and the search still goes on.

Noise suppressors developed by this research are installed on every U.S. commercial jet in operation, despite the fact that their use reduces engine power, which lowers the maximum permissible gross take-off weight and adds substantially to the en-route fuel costs.

Representative Oren Harris, (D-Ark.), Chairman of the House Interstate and Foreign Commerce Committee reported to the First Session of the 86th Congress as follows:

"The aircraft noise problem . . . is a complex and difficult one involving considerations of great importance to the national transportation system and the development of an adequate system of airports to meet the needs of air transportation and the national defense. The Committee study of this difficult problem will continue in cooperation with representatives of the Federal, State and local agencies involved, the aviation industry, airport operators and residents in the vicinity of airports concerned, who are vitally interested."

Formation of NANAC is an important contribution toward this goal and its efforts deserve the support of all of us.

The aircraft noise problem will not be solved over night, nor does it appear that there is any total solution to the problem. It will take the best efforts of everyone, both in the aviation industry and in the affected communities, to bring about an acceptable solution.

The National Aircraft Noise Abatement Council is fully aware of its responsibility in this regard and will take every measure it deems necessary to accomplish this objective.

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